Danish Institute for Fisheries Research
Useful fisheries research

DTU
Technical University of Denmark

User Manuel

Ship Information System

Data Presentation program

Index

1. Histoy behind SIS 3
2. Data presentation 4
3. Short repetition 4
   3.1. Home 4
   3.2. Activities (F3) 5
   3.3. Data (F4) 5
   3.4. Tools 5
   3.5. Options 5
   3.6. Help 5
4. Activities 6
   4.1. Data Export 8
5. Graphs 8
   5.1. Graph zooming 9
   5.2. Graph Options 10
   5.3. Graph buttons 11
6. Data 12
   6.1. Live Data 12
   6.2. Historical Data 14
7. Data Mapping 15
   7.1. Licenses 16
   7.2. Getting Started 16
   7.3. Functionality 17
8. CTD Transect 20
   8.1. Web Service 20
   8.2. Getting Started 21
   8.3. Plot Options 22
   8.4. Constraints 26
9. Side Bar 26
10. Togt Planlægnings modul 28
   10.1. Modulets opbygning 28
   10.2. Træstrukturen 29
   10.3. Kortet 29
   10.4. Planoversigten 29
      9.4.1 Tilføj punkt 29
      9.4.2 Punkternes kolonner/felter 29
11. Scanmar (Trawldata modul) 31
   11.1. Real-time Scanmar view 31
   11.2. Real-time Scanmar graphs 32
   11.3. History section 32
   11.4. Sensor setup 33
12. Cruse repport 37
13. Distance Calculator 41
14. Appendix A – Data Sampling Types 42

1. Histoy behind SIS

Ship Information System, SIS, is design for sea research ship. Its purpose is to control data gathering and give the scientists an opportunity to quickly achieve an overview of the incoming measurements, so cruise plans can be change as a result, but also to detect sensor or system errors during the cruise and coordinate actions according to them. Data from earlier or current cruise activities can also be viewed and data analyses can be done to determined changes for the cruise plan. It is also possible to export data from the database system to other computers for analyze purposes.

The system is designed to support a structured and coordinated gathering of informations of which the type of activities is the determined factor for how often the data is gathered. This means that the system will ensure that related data will be registered within the time it is planed for, and also in some area, the system ensures that the frequencies for data collection belonging to an activity is determined by the gear type that is used. To understand the system, there are other fundamental properties to understand. A fundamental property about activities onboard a sea research ship is that there can only be one gear or activity in the water at any time, but however there can be a serial of activities at a research station. Another property is that the person in charge on the ship starts and stops the activities and thereby also starts and stops the data collection process. You can say that even collecting a little bit of water with a little container must be registered as an activity on the ship, if the data is to be used later on.

In return the activities on the cruise will be structured where every of the ships secondary data registration is attached to and thereby related analyses can be made later on.

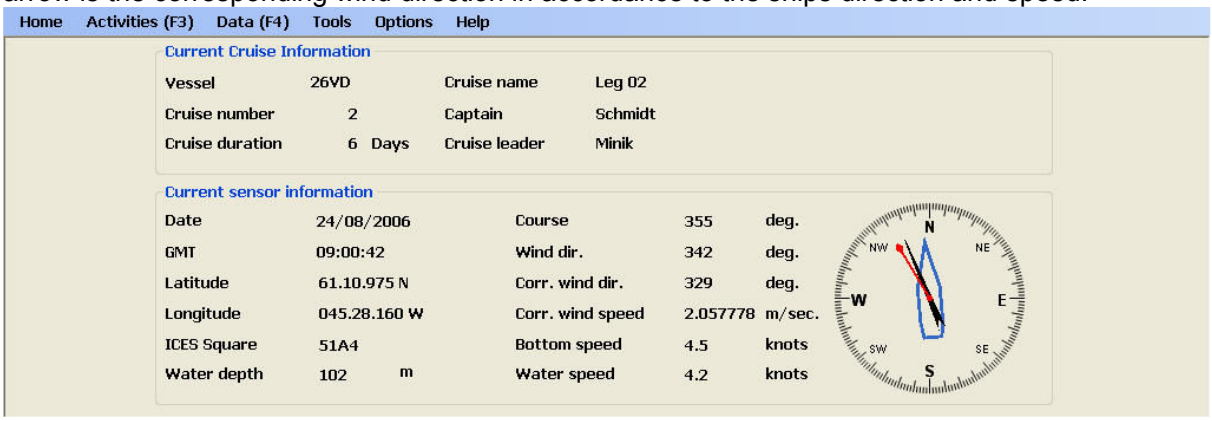
Beside the mentioned, SIS also contain a series of extra facilities to make it easier for the scientists to follow up on the changing conditions of the sea and the weather or the changing of the ships direction. These facilities will be discussed in this manual.

This version of SIS is a third generation of the SIS system. They were all used on the research ship DANA. The first system was based on DOS, the second was made in ASP and was 100% web based. Because of the adequacy of the previous system, it was determined at the beginning of this new version, that it should be made as a stand-alone application written in C# and runs on the .Net 2.0 platforms. It will communicate with a Dana database located on the MS SQL server onboard the ship. This means that the application itself is not communication heavy as previous and regularly updating of the system can be done easily and automatically on all of the ship's installations.

The SIS system consists also of a data gathering part which is not described in this manual. But instead is described in the WinCollect system manual. The WinCollect system is a system based on serial NMEA communication over serial cables or TCP/IP network. The WinCollect system ensures data collection to the Dana database and distribution of data to other systems onboard the ship. All aspects of the SIS system were developed by Danish Institute for fishery research, DFU. As a build on to SIS, DFU have developed a web based GIS application for geographical displaying of the SIS system data.

2. Data presentation

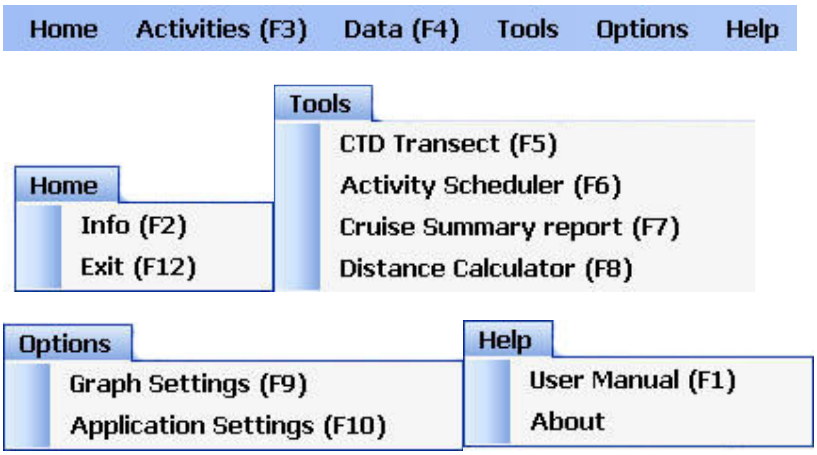
The historical data presentation is built up as a part of the Bridge-system-application, but at the same time functions as a standalone application. This user guide primary targets those who use the standalone application. The idea behind the application is directly to be able to view historical activities of the ship and retrieves the data in numbers, but also as illustrations in the form of grafs. At the application's startup, the following screen shots are displayed (figure 1). The current cruise informations data is static and will not change at any time during the cruise unless the user makes the changes (the changes must be made I the bridge system). However the current sensor information will be updated every 10 seconds. All these different data will be gathered by measurement equipments onboard the ship. To the right, a compass is shown showing the ship's position, marked by the ship (in blue).The big arrow corresponds to the wind direction and the red arrow is the corresponding wind direction in accordance to the ships direction and speed.



(Figur 1 – startup screen shot)

3. Short repetition

Activation of the different parts of the application is done through the top menu or the F-buttons. The menu is shown in figure 2.



(Figur 2 – startup screen shot)

3.1. Home

Info (F2)
This brings the user back to the primary screen shot showing the current cruise (if there are any) and the current sensor information.

Exit (F12)

3.2. Activities (F3)

This choice will open a new module within the application. It is possible here to search earlier activities with different criteria (year, cruise, start/end, gear etc.) See Activities section.

3.3. Data (F4)

This takes you to the Data section which is described in section 5 of this manual.

3.4. Tools

CTD Transect (F5)

Activity Scheduler (F6)
Described in chapter: ***Error! Reference source not found. Error! Reference source not found.****, (in danish)*

Cruise Summary Report (F7)

Distance Calculator (F8)

Scanmar
Described in chapter: *10 Scanmar (Trawldata modul)*

3.5. Options

Graph Settings (F9)
This provided options on how the graphs within the application are displayed. From here the precision of the Y axis values, the number of X and Y intervals draw and which parameters of the CTD graphs should be drawn can be defined.

Application Settings (F10)
Language settings are located here. The application supports Danish and English.

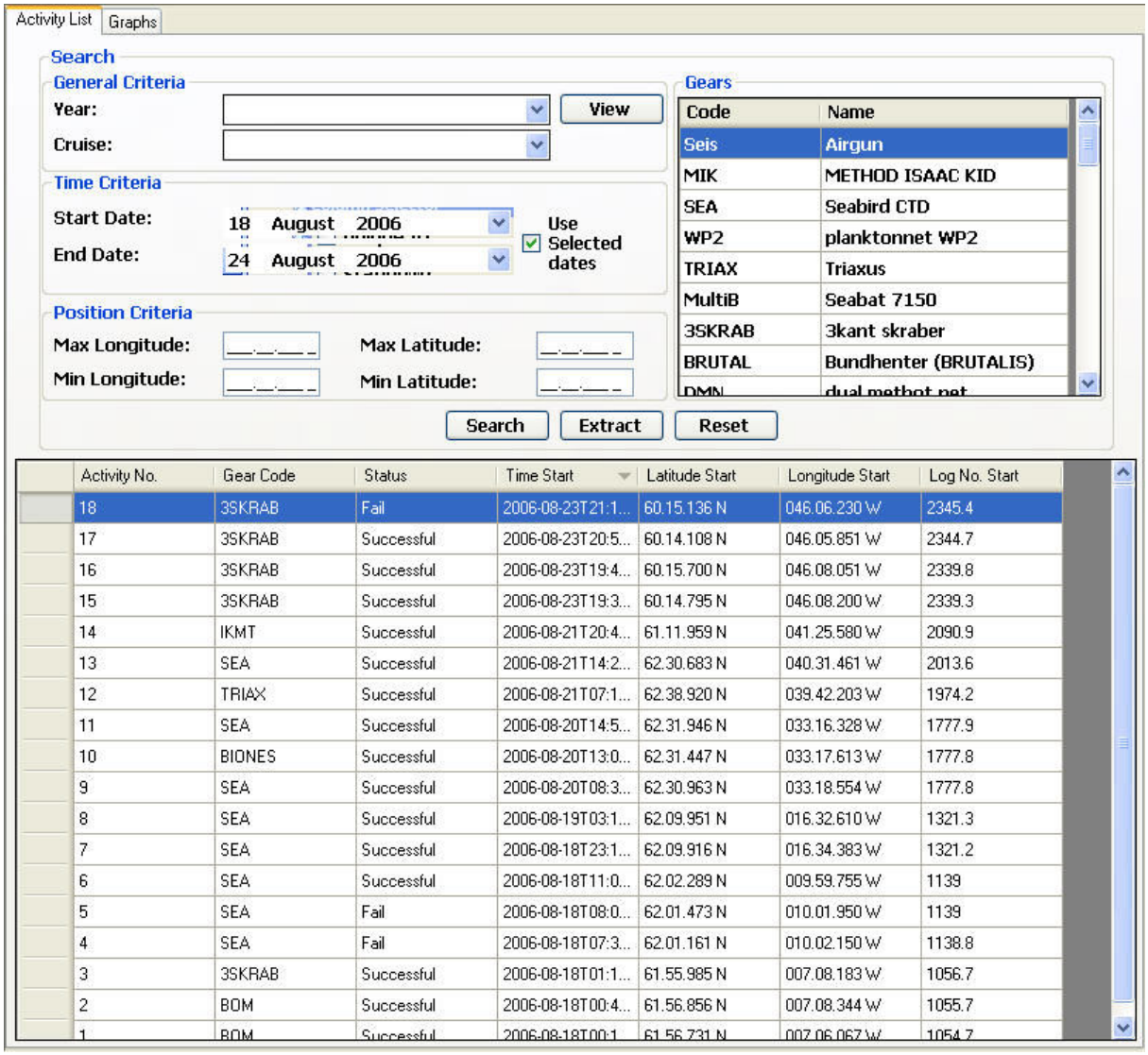
3.6. Help

User Manual (F1)
This opens this document in a separate window from the Data Presentation application.

About SIS

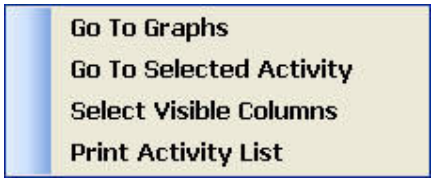
This shows that the Data Presentation Application was created by the Danish Institute for Fisheries Research for the Galathea3 Expedition.

4. Activities



(Figur 3 - aktivities)

The figures above shows 2 forms containing list of activities (standard) and graphs.
The list of activities contains the search function to retrieve the desired activities. On the right shows the current cruise data, activity data and direction/wind direction – this part is also visible in the graph's form. It is possible to disable this part by clicking on the little square at the upper right corner right above and a bit to the right from the cruise data. This will minimize this part and give more room for ether the search function on the activity list or the graph on the graph form.
Show cruise button shows cruise data for the chosen cruise In a little popup. The search function allows a combination of general criteria, time criteria, position criteria and gears to use in the search. The search result (activities) will then be shown in a list here under as shown in figure 3.
To see further information of a given activity, right click on the desired activity and a mini-popup window will appear (figure 4).



(Figur 4 – minipopup)

Go to graphs

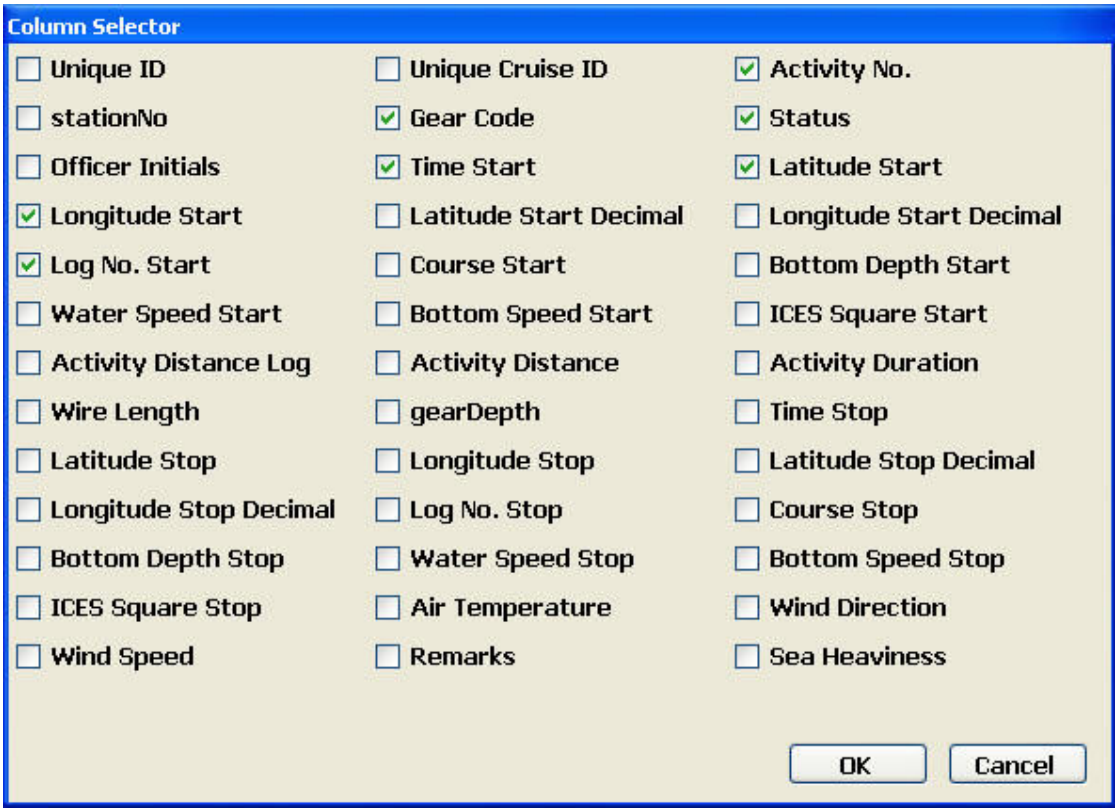
This choice opens the graph component and most of the activities data will be shown in correspond to the time, such as bottom speed, surface speed and water depth. (See figure 5).

Go to the chosen activity

This opens a new form showing all data of the chosen activity.

Choose visible columns

A pop-up window appears. Here it is possible to choose columns to be displayed in the activity list. See figure 4.

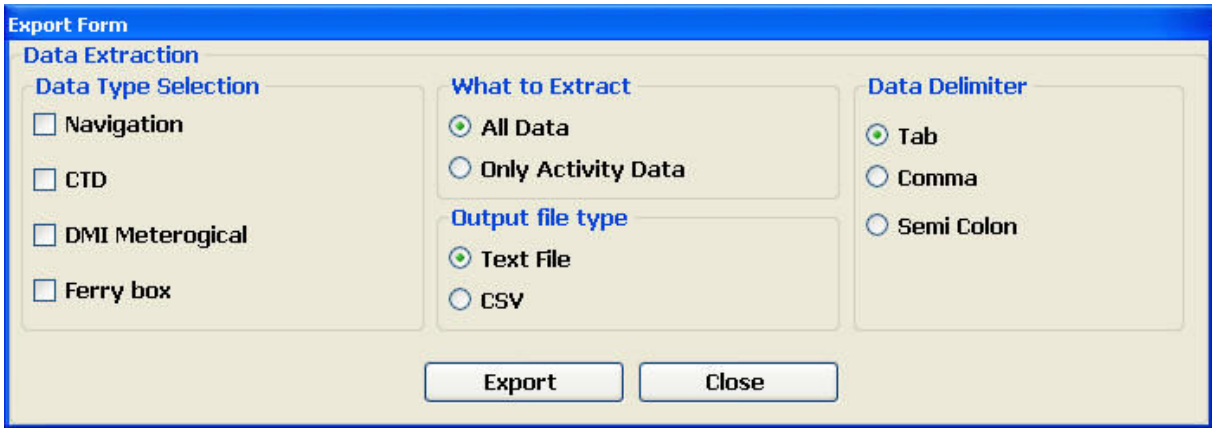


(Figur 5 – vælg synlige kolonner)

Print activity list

Prints out the activity list with all the selected columns.

4.1. Data Export



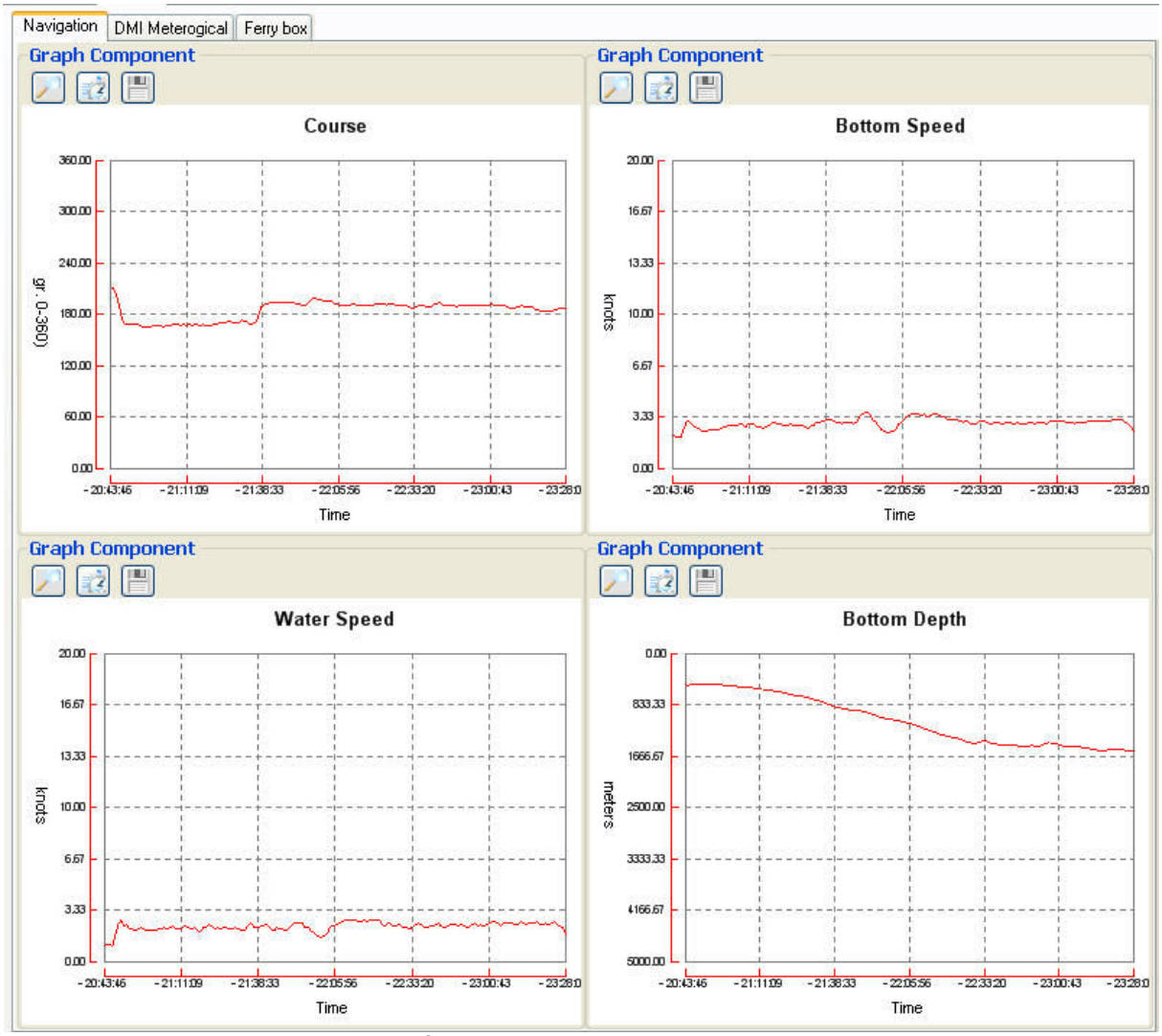
(Figur 6 – Data Export Form)

The data recorded between the start date and time of the first activity and the stop date and time of the last activity of the activities list can be exported from this form. The data exported is determined by which check boxes in the “Data type udvalg” are checked. By selecting “Alt Data” (default) in the “Udtræk kriteria” section all sampled data for the selected data types is exported. When “Kun Aktivitet Data” is selected only the data (all of the columns listed in Figure 5) defining the activities listed will be exported. Data can be exported as either ASCII text files or CSV (excel) files selected from the “Fil udlæsning type” section, and the delimiter between data columns can be defined by the selection in the “Data afgrænser” section.

5. Graphs

Graphs for each type of data sampled (Navigation, DMI Metrologisk and Ferry Box) can be viewed for each activity. For special case types of gears (CTD) additional graphs can be viewed, these are described later. The graphs for the Activity section display the data that was recorded during that activity.

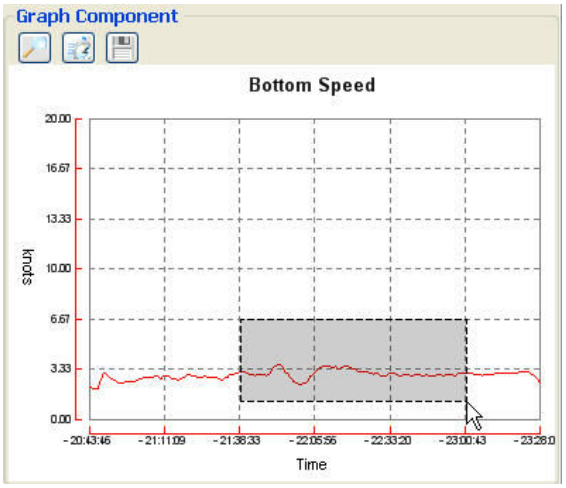
This part is build up so you will get ether 1 or 4 graphs on the screen. See figure 7. There are 3 buttons to be used for each of the graph. See figure 8. The magnifying glass gives the possibility to zoom in/out of a graph. The second button gives the possibility to look at the raw data behind the chosen graph. See figure 9 and 10. The last button gives the possibility to save the desired graph as a JPG-image.



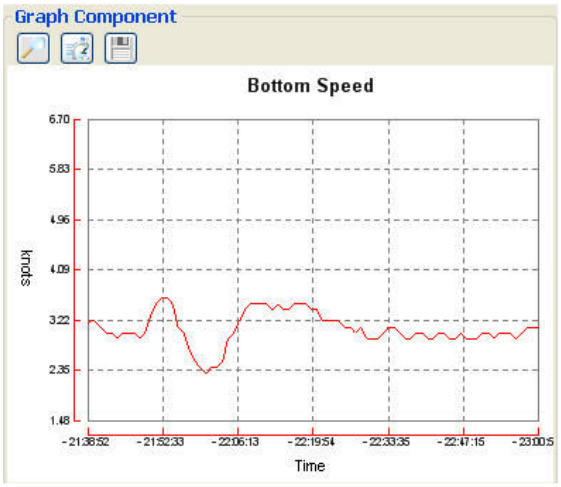
(Figur 7 – Aktivitetsdata vist som grafer)

5.1. Graph zooming

All graphs are zoomable, to specify a region of the graph to zoom in to click and hold the left mouse button then drag the mouse so the region of interest is highlighted. Then when the left mouse button is released the graph will zoom into that region. To return to the full view of the graph click the right mouse button and the graph will return to the initial state. An example of zooming is shown in Figure 8 & 9.



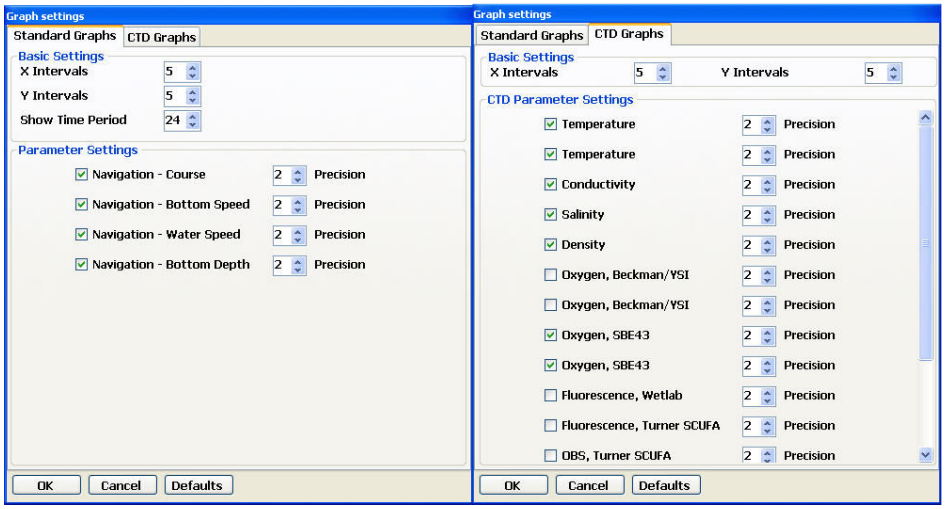
(Figur 8 – Selecting region of interest)



(Figur 9 – Zoomed in view)

5.2. Graph Options

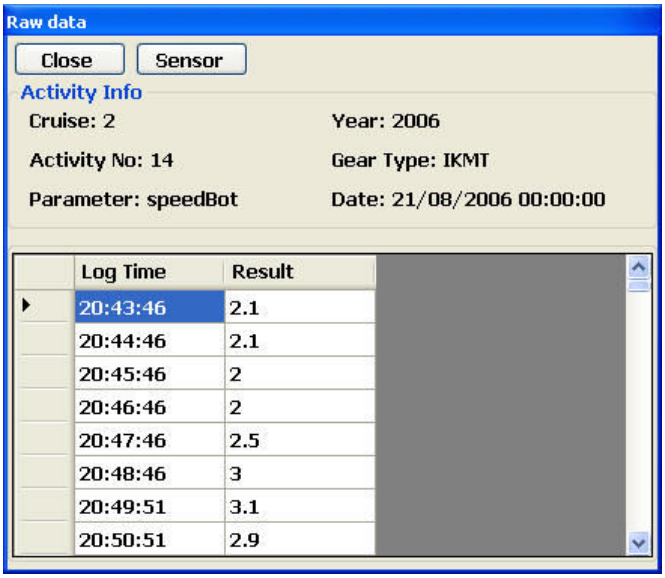
The graph options form contains two section, standard graphs and CTD graphs. In the standard graphs section you can select the number of X and Y grid lines should be displayed upon the graph and the precision, between 0 and 5 decimal positions, which the Y axis results should show. The CTD graphs section also allows the number of X and Y grid lines to be specified and the precision of parameter results to be specified. It also allows for the selection of which parameters should be displayed upon the CTD graph, other the parameters selected will be displayed, so long as they were recorded during the CTD activity.



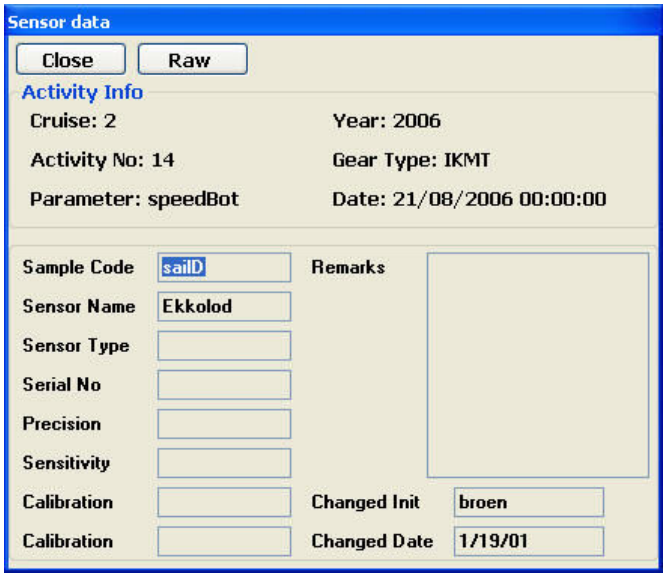
(Figur 10 – Graph options)

5.3. Graph buttons

(Figur 11 – Graph buttons)



(Figur 12 – Raw data)



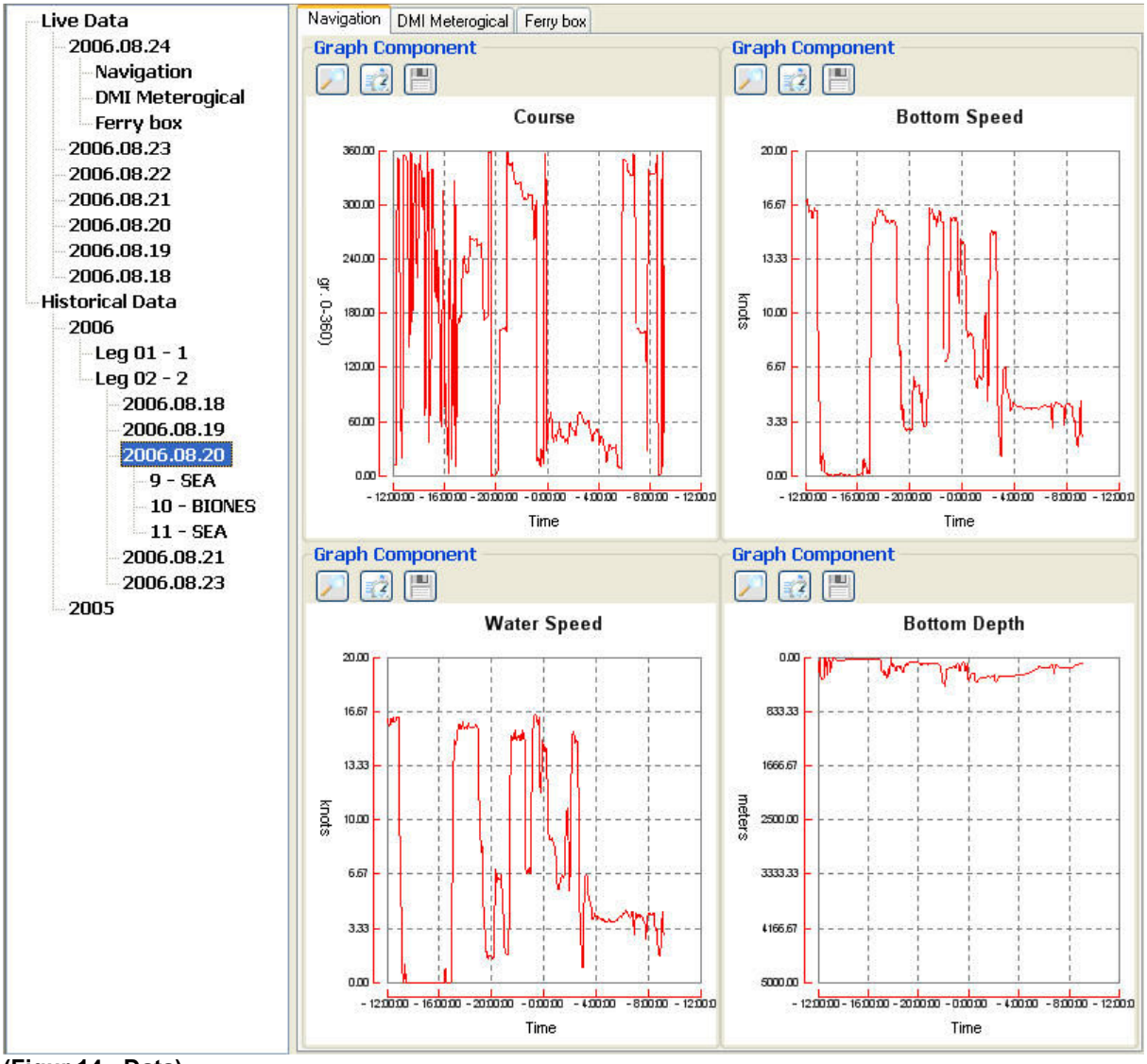
(Figur 13 – Sensor data)

6. Data

The Data section is an alternative method, from the Activity section, of navigating through the data within the application. In also offer additional functionality in allowing Live Data to be viewed. The Tree structure is divided into two sub section, “Live Data” and “Historiske data”.

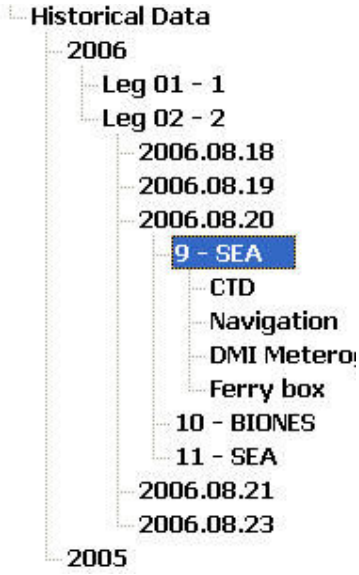
6.1. Live Data

When this section is loaded, provided there is a current cruise, the Navigation data of the latest date will automatically be loaded. The graphs show display data from the current time rounded up to the near hour (13:15 will be rounded up to 14:00) until 24 hours previously. These graphs automatically refresh themselves every 30 seconds to ensure that the latest sample results are displayed. Once the maximum time on the X axis is reached the graphs will automatically redraw themselves readjusting the X axis accordingly.



(Figur 14 - Data)

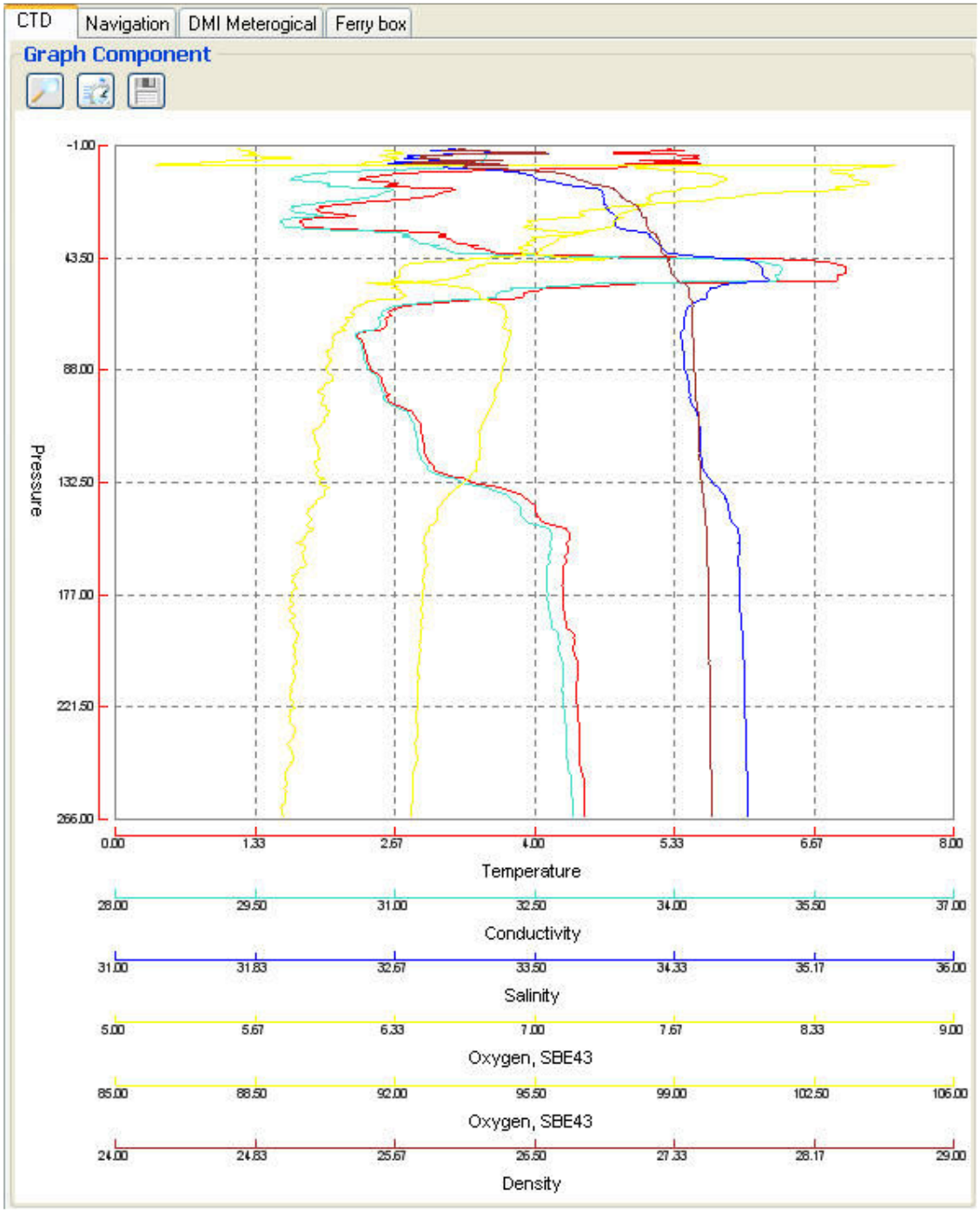
6.2. Historical Data



(Figur 15 – Historiske data tree sektion)

The Historical section of the tree breaks down the data by Year, Cruise Number, Date, Activity (listed in chronological order) and available sampled data. By clicking on the text of a tree node that node will either open or close depending upon its current state. By clicking on a specific type of sample data CTD, Navigation, DMI Meterologisk or Ferry Box the corresponding graphs will be loaded. CTD sample type is a special case and is only available for CTD activities; the graph displayed for this data can be seen in figure 16.

By right clicking on the name of a cruise a form will be loaded that displays the details of that cruise. By right clicking on the gear code of an activity a form will be loaded that displays the details of that activity.



(Figur 16 – CTD Profil)

7. Data Mapping

7.1. Licenses

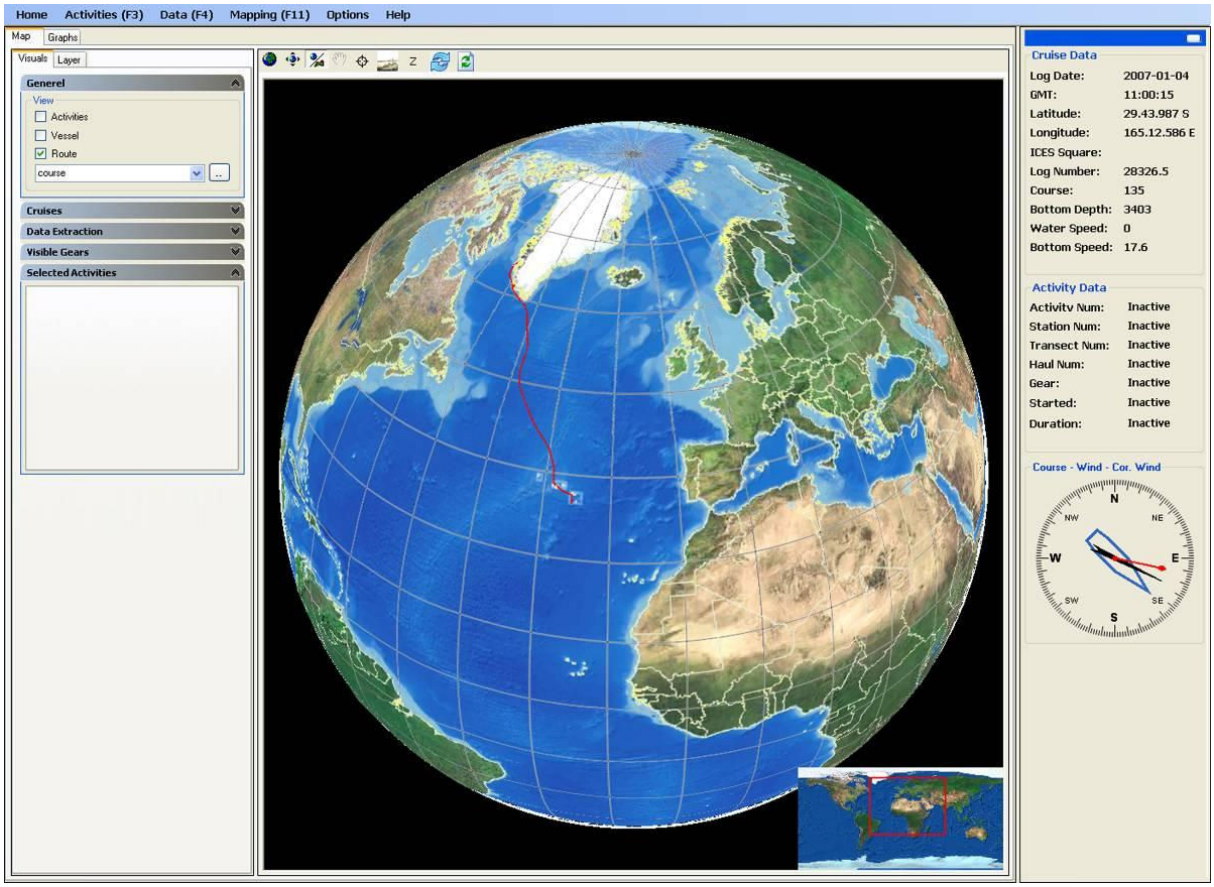
The mapping tool within this application has been built using ArcGIS Engine 9.1. In order to use the tool either ArcGIS Engine 9.1 Runtime license or ArcGIS View 9.1 must be installed on your computer. Also required is the 3D Analyst Extension license. DFU has the required licenses for the computers it is responsible for. The required licenses are covered by the SEDIRK GIS agreement with Informi/ESRI. This agreement covers all sectors of Research Institutes and the ministries with Research Institutes. However each Institute needs to have the licenses in question from the pool of licenses. This means that RISØ, DMU and DFU, but not the Universities, Medias, the Navy, and DE so far.

7.2. Getting Started

When the tool is loaded is must initially load the GIS layers to be used. This may take between 10 to 60 seconds depending upon the processing power of your computer. While the tool is loading the following splash screen will be displayed so that you know something is happening.

(Figure 17 – Loading Splash Screen)

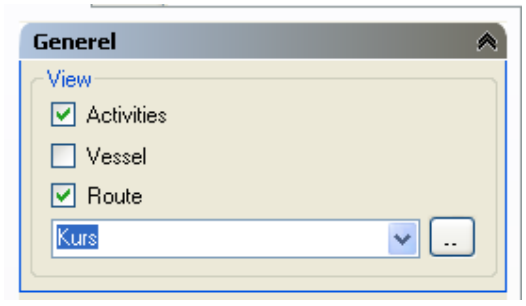
Once loaded the initial view will be shown. As default the navigation for the globe allows for it to be rotated by holding down the left mouse button and dragging it in the direction to rotate. To zoom in/out of the globe the right mouse button should be held then move the mouse either forwards or backwards for the required result. The mapping tool can be view in either 1 of 2 states, Global View which is a view from above and Scene view from which the camera's altitude and view angle can be altered. To switch between these types of view the button can be used.



(Figure 18 – Globe View)

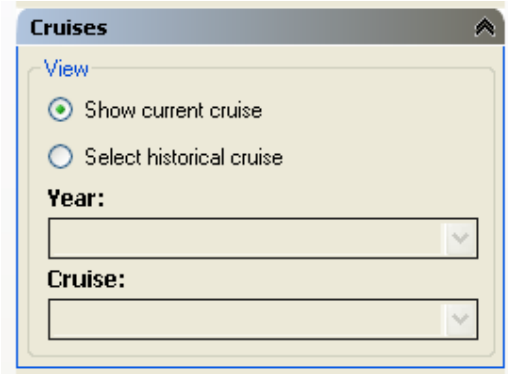
7.3. Functionality

As the mapping tool has been created using ArcGIS tools it contains a set of GIS Layers that can be switched on and off. These layers can be viewed under the “Layer” tab on the left side of the mapping tool. Most of the rest of the functionality for this tool is provided from the “Visuals” tab on the left, while there are also some additional functionality from buttons in the mapping tools toolbar. Within the “Visuals” tab the available functionality has been split into sections, General, Cruises, Data Extraction, Visible Gear and Selected Activities. Each of these sections can be expanded or collapsed as desired.

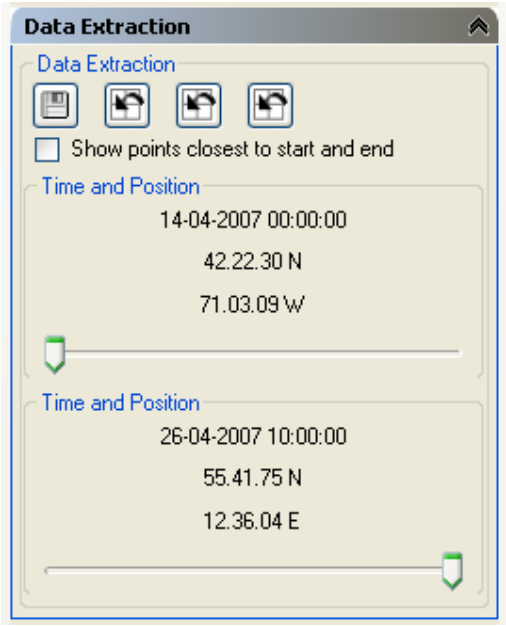


The General section allows for the selection of what data of the selected cruise should be shown upon the map. By using the check boxes the cruises activities performed, the current position and direction of the vessel (only if the selected cruise is the cruise currently being performed) and the cruise route can be shown. There is also a drop down list which allows you to select a type of water parameter that should be used to plot the cruise route. The default parameter is ”course” and when using this the cruise route will be rendered in a constant colour. However it is also possible to select other parameters such as water temperature, this would then cause the cruise route

to be rendered so that the varying water temperature would be visually represented in the cruise route. Finally the .. button can be used to view a key of the different value ranges and associated colours for the selected parameter.



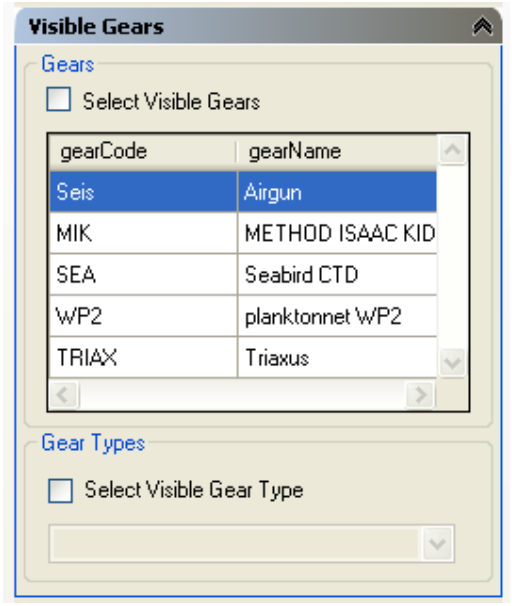
The Mapping tool does not just display the current cruise being performed but can also show historical cruises. The cruise to be shown on the mapping is defined within the ”Cruises” section, the default is always the current cruise being performed, if there is one. However by selecting the ”Select historical cruise” and then selecting the cruise year and cruise name from the available lists historical cruises can be selected. When a new cruise is selected the Splash screen shown in figure 17 will be shown as the selected cruise data is loaded. The cruise data shown on the map with be than which has been specified in the ”General” section. When the current cruise is the selected cruise its cruise data, cruise route, vessel position/orientation and activities performed will be updated in real-time. This therefore means that it is actually possible to view the vessel moving or additional activities being rendered on the map. The mapping tool checks for new data once every minute.



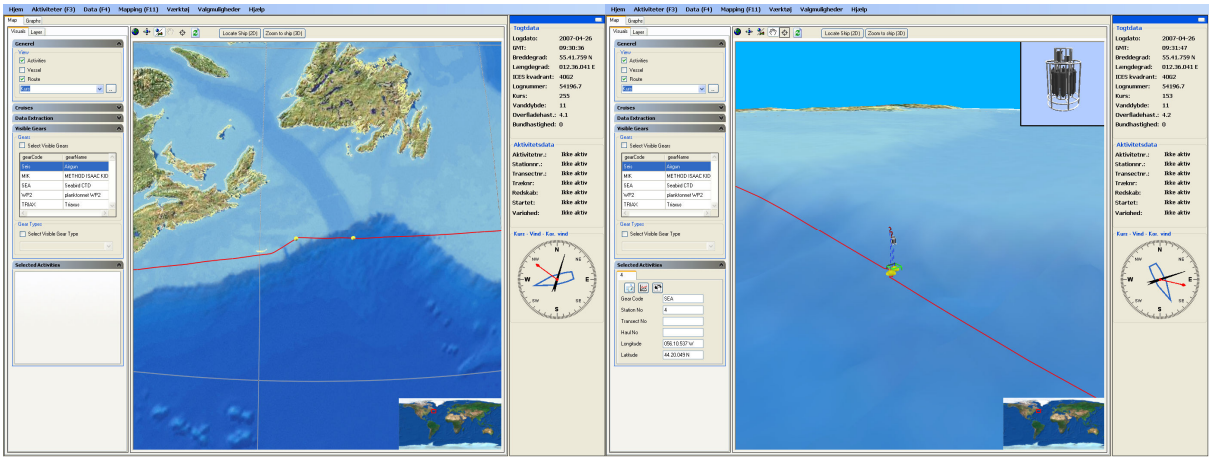
The Mapping tool of SIS is fully integrated with the rest of the SIS application and therefore all data within the SIS application can be accessed from here. Sensor parameter data can be extracted using the mapping tool. This can be done by selecting the time/position range using the two sliding bar. The top sliding bar represents the start time/position data should be extracted from and therefore this should specify an earlier time than the second sliding bar.

The selected time/positions can be viewed on top of the cruise route by selecting the ”Show points closest to start and end”, this will be make a small green sphere appear at the selected start time/position and a small red sphere appear at the selected end time/position.

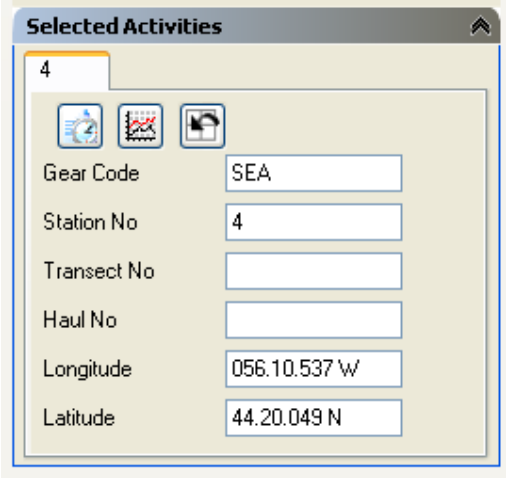
Exporting of data is then performed in the same fashion as described in section 4.1 by pressing the button. The three buttons can be used to zoom to the specified start time/position, the mid point (which will hopefully allow the fully selected region to be display) and the specified end time/position.



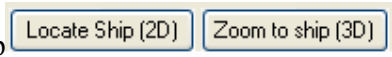
As it is quite common for a variety of different activities to be performed at a single location it is possible to specify either which specific gears or a type of gear that should be shown on the map. This is done from the ”Visible Gears” section whereby multiple gears can be selected from the list or whereby a specific type of gear is selected from the drop down list. In order for the specific selected to take effect either the ”Selec Visible Gears” or ”Select Visible Gear Type” check boxes should be checked.



When reasonably close to the symbols of the different activities it is possible to select them by clicking upon them. In order for this to function the button in the map tool bar must first be selected, this will attempt to find an activity at the position clicked upon the map, therefore once you have found the activity/activities you are looking for it is best to deselect this button. Then when an activity symbol in the map is clicked upon an overview of the activities data will be displayed in the ”Selected Activity” section and a 3D model of the activity will be displayed in the top right hand corner of the map. If when selecting an activity multiple activities are found the ”Selected Activity” section will display eash activity overview within its own tab page. Then the 3D model shown will be that of the currently selected activity tab page.



From the "Selected Activity" section it is possible to view additional data about that activity. The button will open a form displaying the specific data about the activity that was filled in when the activity was created and ended within the Bridge Application of SIS. The button will take you to the sensor graphs showing the general data recorded during the activity. These graphs are shown on a separate tab page than the map so it is possible to get back to the map by selecting the maps tab page again and it will appear as you left it. The button zooms to the selected activity, which can be useful if you have navigated away from the selected activity and wish to return to its position quickly.

Finally there are an additional two button in the tool bar of the map 

. These buttons can be used to quickly zoom to the current position of the vessel. The "Locate Ship 2D" zooms to a position in the global view directly above the vessel, while the "Zoom to Ship 3D" will take you to a scene view position where the vessel is visible.

8. CTD Transect

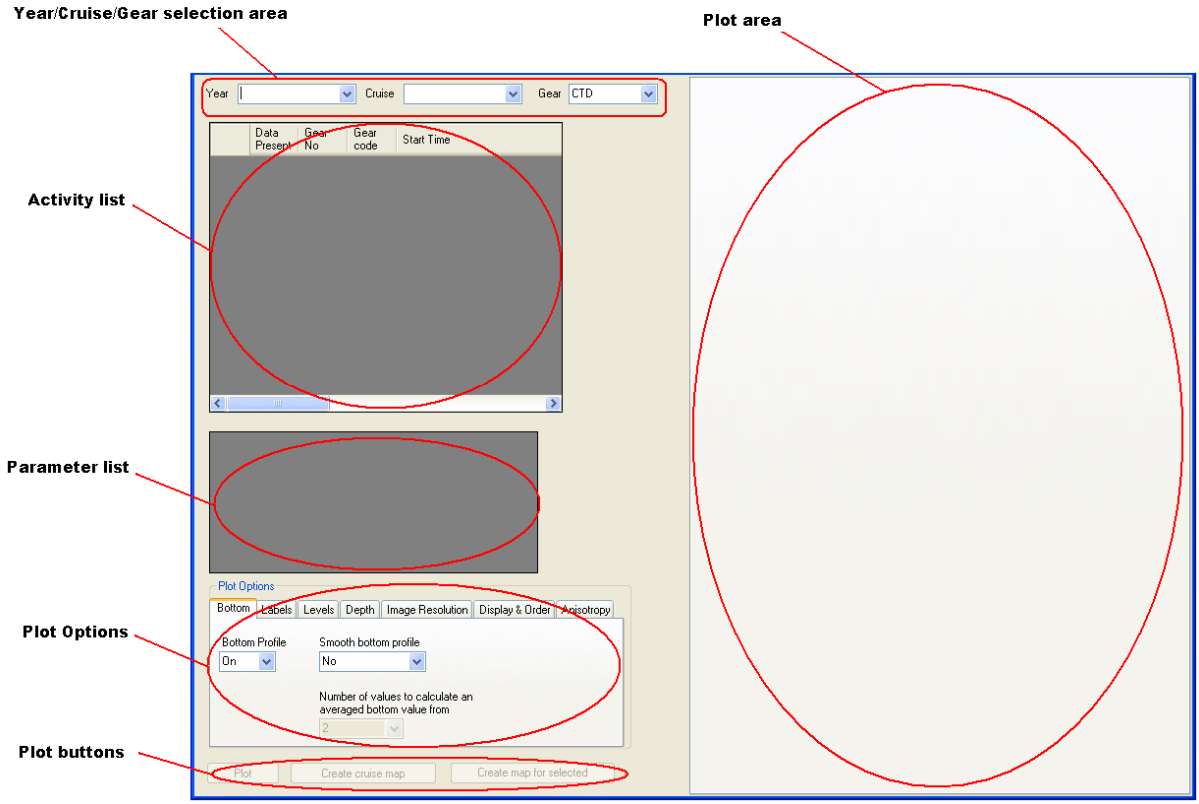
The CTD Transect module is a tool for plotting cross over plots of measured parameters. For plotting a contour plot of a cross over it is possible to select three or more Seabird CTD casts or one Triaxus activity.

8.1. Web Service

The CTD Transect module is using a web service which is using Golden Software's *Surfer 8* for creating contour plots and maps. The interpolation used for the grid data is Krieging with a linear variogram where the anisotropy may be adjusted.
The web service is also using Microsoft's *Web Service Enhancement 3* (WSE) 3.0 for Microsoft® .NET, which is an add-on for Visual Studio 2005 and the Microsoft .NET Framework 2.0, for sending the image data. The WSE add-on can be downloaded at http://www.microsoft.com/downloads/details.aspx?FamilyID=018a09fd-3a74-43c5-8ec1-8d789091255d&displaylang=en
For be able to run the CTD Transect module either the WSE 3.0 or the redistributable runtime for WSE 3.0 have to be installed on the computer. The WSE 3.0 or the redistributable runtime for WSE 3.0 can be downloaded at http://www.microsoft.com/downloads/details.aspx?familyid=9E59C3FB-E7BC-4D91-908E-411A8D329F3D&displaylang=en
More information and help on installation is available at http://da-db03\SIS

8.2. Getting Started

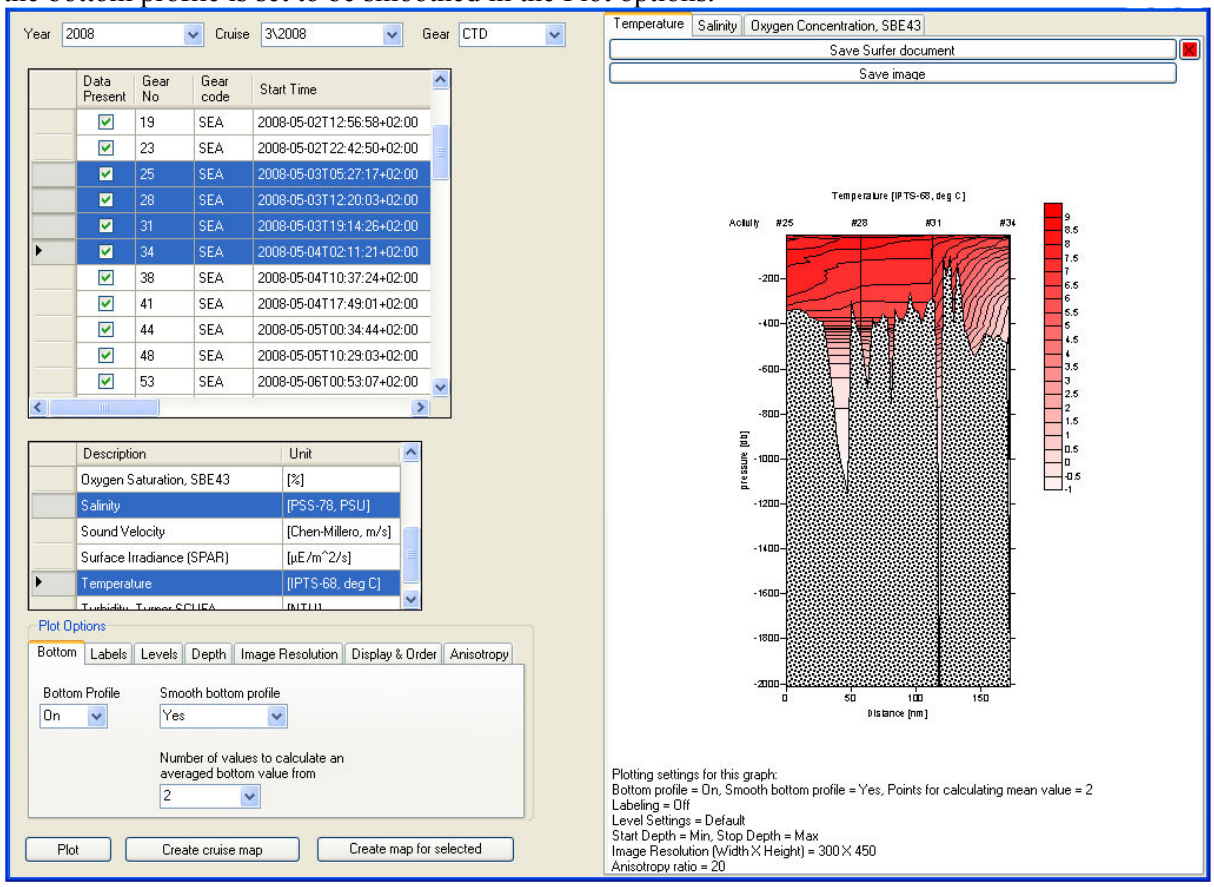
The CTD transect module can be divided in six areas as seen in the figure below



The first thing to do for making a cross over plot is to select which year, cruise and what kind of gear that was used in the Year/Cruise/Gear selection area. When a year is chosen all the cruises made in that year are available for selecting. The gears to choose between are CTD, which is the Seabird CTD, and the Triaxus. If activities made with the selected gear and the selected cruise exists then the activities are shown in the activity list. If there are no activities for the selected gear and year/cruise the list is empty. When an activity is selected in the activity list the parameter list is filled with parameters that can be selected for plotting. In the Plot options the settings for the plot can be set. When the selection of the activities, parameters and plot options are done the cross over plot can be made by clicking the "Plot" button. There are three buttons for different plots. The "Plot" button is for making cross over plots, the "Create cruise map" button is for making a map showing all the activities in the activity list and the "Create map for selected activities" button is for making a map for the selected activities only. In the Plot area the plots are shown. Each plot will be shown in a tab page and in each tab page there are three buttons. One, the Save Surfer document button, is for saving the plot as a Surfer document (.srf) ant the one other button, "Save image", is for saving the plot as an Tiff image (.tif) and the third button is closing the tab page.

Example

Below is an example of the CTD Transect module. The selected cruise is 3\2008 and the gear selected is CTD. In the activity list the Seabird CTD activities are shown. Four of the activities are selected for the transect plot. Three parameters are chosen in the parameter list (only Salinity and Temperature are visible in the figure) to be plotted. In this figure the bottom settings is visible and the bottom profile is set to be smoothed in the Plot options.

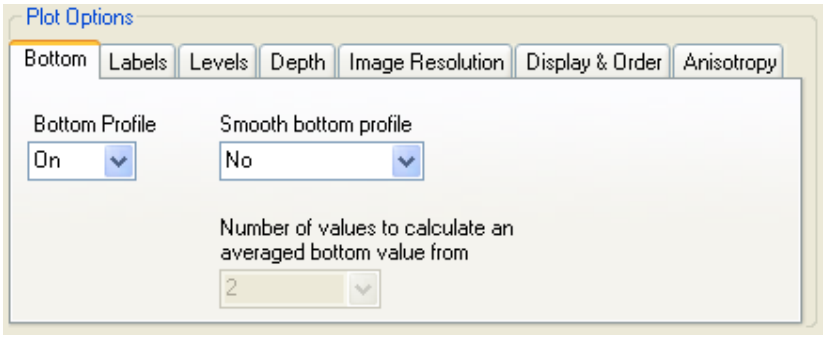


In the right half the actual plotting area is shown. Three cross over plots are made for the selected parameters “Temperature”, “Salinity” and “Oxygen Saturation, SBE43” which are shown in tab pages. In each plot tab page there are three buttons. One, the “Save Surfer document” button, is for saving the plot as a Surfer document (.srf) ant the one other button, “Save image”, is for saving the plot as an Tiff image (.tif) and the third button is closing the tab page.

8.3. Plot Options

In the “Plot Options” section there are several tab pages with different options for the plot. Below are descriptions for the different options. The plot options that are set will only affect the plot that is created when the plot is made.

Bottom

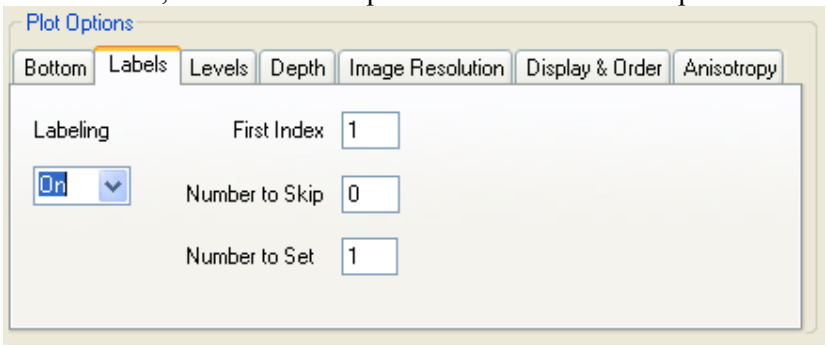


When the “Bottom Profile” option is set to “Off” no bottom profile will be plotted in the contour plot. If the “Bottom profile” option is set to “On” the bottom will be plotted, if bottom data exist, in the contour plot and the option to smooth the bottom profile is then available.

If the “Smooth bottom profile” option is set to “Yes” the bottom profile is smoothed by averaging bottom depth values. How many bottom depth values the averaged bottom depth value is calculated from are set by selecting a value for the “Number of values to calculate an averaged bottom value” option.

Labels

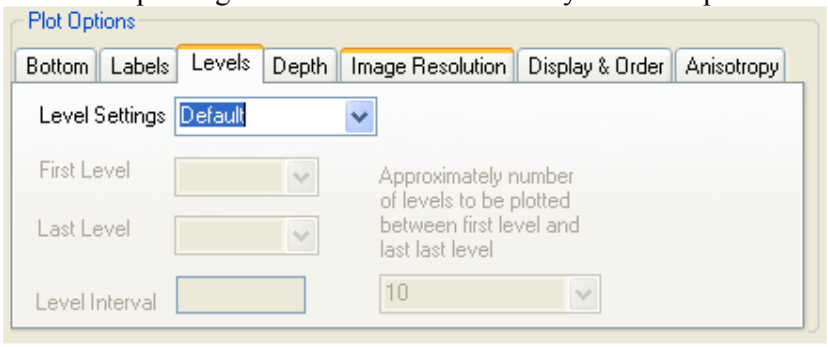
In the Labels tab the options for the level curve labeling is set. The default value for the “Labeling” option is set to “Off” which won’t label any level curves. If the “Labeling” option is set to “On” the “First Index”, “Number to Skip” and “Number to Set” options are made available.



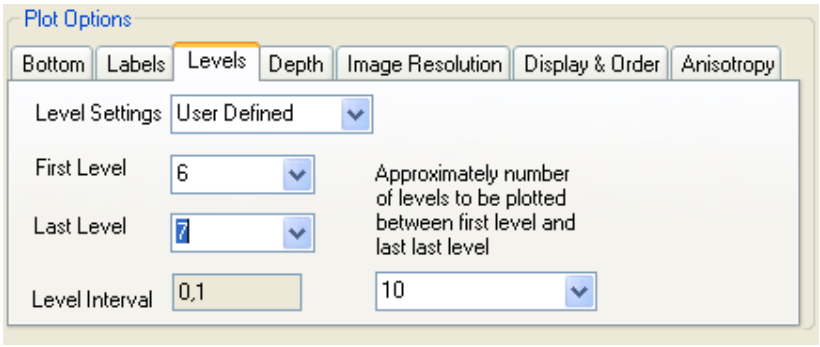
The “First index” is the index of the level curve that will be the first labeled level curve. “Number to Skip” is the number of level curves between the labeled level curves that will be leaved unlabeled. The “Number to Set” option specifies how many adjacent level curves that will be labeled before the unlabeled level curves specified. The Default values when labeling is On is First Index=1, Number to Skip=0 and Number to Set=1 which will label the first level curve, not skip any labeling between the labeled level curves and label one level curve between the skipped level curve. Thus the Default option when labeling is On will label all level curves.

Levels

In the Levels tab page the limits and intervals for the level curves are set. If the “Level Settings“ option is set to Default the surfer are creating contour levels by default. If several parameters are chosen for plotting the Default value is the only allowed option for the Level Settings.



If the “Level Settings” option is set to “User Defined” the values for the “First level”, “Last Level” and the number of levels may be specified. The minimum and maximum values for the parameter in the activities selected are automatically calculated. The “First Level “selected has to be lower than the “Last level”. The “Level Interval” is automatically calculated for the selected values for the “First Level”, the “Last Level” and the number of levels.



Depth

In the Depth tab page it is possible to specify to what depth the depth interval the contour plot will plotted to. The default value is Max which will make a plot out of all data.

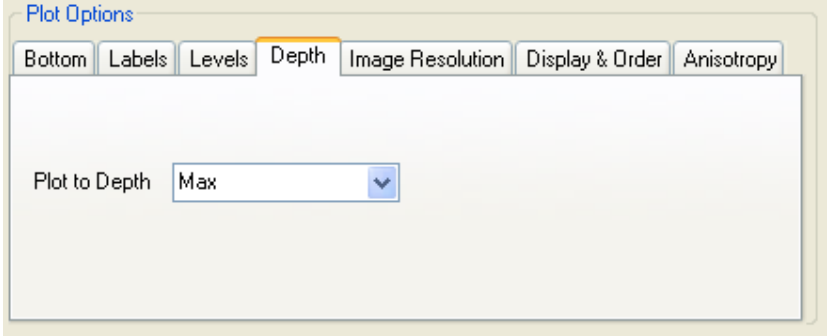
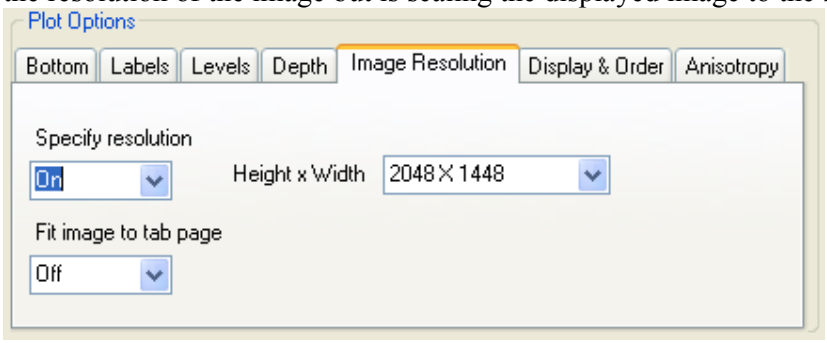


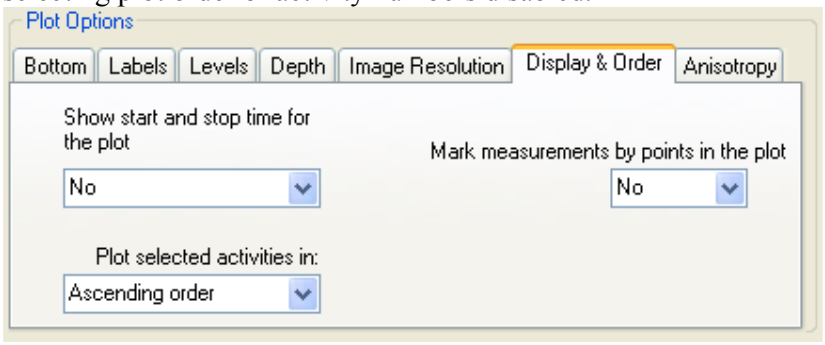
Image Resolution

In the Image Resolution tab page options for the image resolution for the contour plot are set. If the "Specify resolution" option is set to Off the resolution is set so that the image will fit the current size of the window application. If the "Specify resolution" option is set to On the resolution is set to what is specified by "Height X Width". The option "Fit image to tab page" doesn't actually change the resolution of the image but is scaling the displayed image to the size of the picture display area.



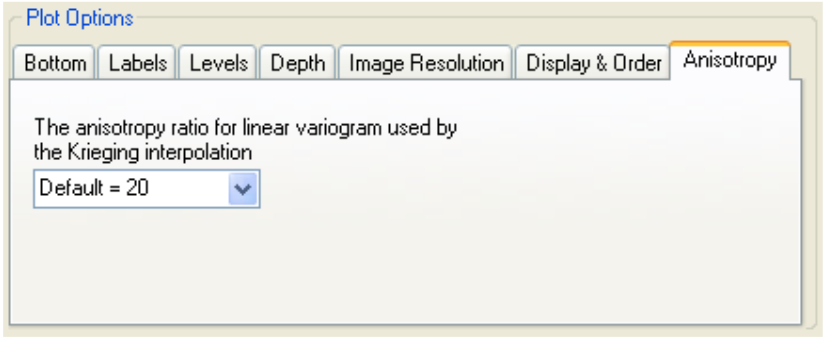
Display & Order

In the Display & Order tab page settings for if the start and stop time will be plot, if the measurement points would be plotted and if the plot should be in order by ascending or descending activity number. If the chosen gear is the Triaxus the option "Plot selected activities in:" for selecting plot order of activity numbers disabled.



Anisotropy

In the Anisotropy tab page the anisotropy ratio for a linear variogram that is used by the Krieging interpolation. The default setting is 20 and a suitable value for an isotropic case is 1. For oceanographic cases it is often an anisotropy situation because of more data points in vertical direction than the horizontal direction and the layered situation because of the ocean water density. The horizontal values will usually not differ as much as the vertical.
By setting the anisotropy ratio to value higher than one the interpolation will search more in the horizontal direction than in the vertical direction.



8.4. Constraints

When plotting Seabird CTD activities it is required to select at least three activities for making a cross over plot. Several parameters can be selected for plotting if the selected activities are Seabird CTD activities but level settings can only set when just one parameter is selected.
When the selected gear is the Triaxus it is only possible to select one activity at one time and therefore it isn't possible to make any selection for plot order by activity number.

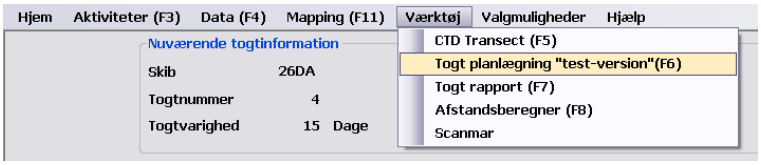
9. Side Bar

On the each of the Activity and Data sections a side bar of quick reference data is shown. This data is split into three sections, current cruise data, current activity data and a compass. The current cruise data shows information about the current location, course and speed. The current activity section displays, if an activity is current active, information about the activity, gear number, station number, gear code, start time and current duration. The compass displays the vessel course and the wind direction (in black) and corrected wind direction (in red). The small button in the top right of this section can be used to collapse the side bar so that more space can be given to the activity or graph sections.

(Figur 20 – Side Bar)

10. Togt Planlægnings modul

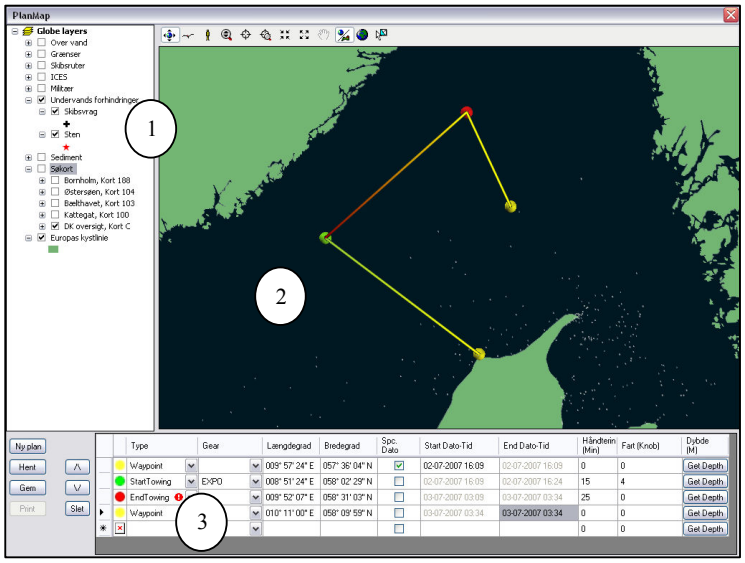
Togt planlægnings modulet er et GIS baseret værktøj, hvor man kan definerer forskellige aktiviteter og deres placering og derved skabe sig et overblik over hvordan et forestående togt kunne tage sig , med hensyn til tid/afstand, dybder, forhindringer osv. En foreløbig version findes under "Værktøj" i hovedmenuen.



Det er på nuværende tidspunkt ikke muligt at starte "Togt Planlægning" efter at "Mapping" –delen har været startet, og omvendt, hvilket ses ved at kortet bliver sort når der zoomes ind.
Dette skyldes at der PT. ikke kan køres forskellige GIS programmer i den samme tråd/programafvikling. Det er derfor nødvendigt at lukke SIS-programmet ned ved at vælge afslut i hovedmenuen under hjem og derefter starte det op igen. Den omtalte fejl kan også opstår hvis man vender tilbage til kortet, enten via "Mapping" eller "Togt Planlægning", efter at have været et andet sted i programmet.
Dette problem vil blive rette så snart vi har den nye version af ArcGIS engine.

10.1. Modulets opbygning

Planlægnings modulets grænseflade består af 3 dele, som vist på figuren nedenfor.

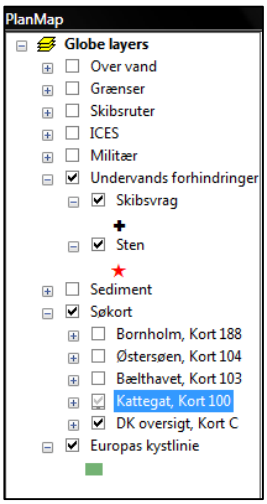


1. Træstruktur over de forskellige datalag der kan vises på kortet. Som fx. skibsvrag el. søkort. *Beskrevet i afsnit 9.2*

2. Kort hvorpå de forskellige datalag og planlagte aktivitets- og rutepunkter vises. *Se afsnit 9.3*

3. Planoversigt i tabelform af de indsatte aktivitets- og rutepunkter. Hver linie er et punkt i det planlagte togt. *Se afsnit 9.4*

10.2. Træstrukturen



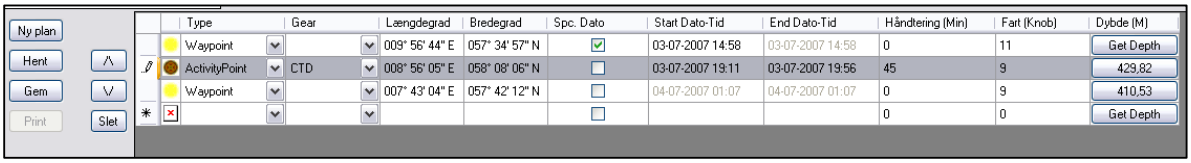
Her ses alle de datalag der kan vises på kortet. Et flueben ud for de forskellige grupper og de individuelle elementer bestemmer om laget bliver vist. På denne måde kan man tænde og slukke for de forskellige datalag alt efter behov. Nogle datalag, som f.eks. de mere detaljerede søkort, bliver først vist når der er blevet zoomet tilstrækkeligt ind. Dog skal der stadig være et flueben i både den overordnede gruppe, fx. *Søkort*, og i det enkelte kort, fx. *Kattegat - Kort 100* . Kort der er slået til, men ikke bliver vist pga. zoom niveauet, er markeret med et gråt flueben.

10.3. Kortet

Kortet kan flyttes rundt med musen, ved at holde venstre museknap nede. Zoomning kan ske ved at holde højre museknap nede og bevæge musen henholdsvis op eller ned.
Dette kan også gøres ved at vælge zoom værktøjet i kortets menubar.
Har man valgt et andet værktøj og gerne vil tilbage til "default" værktøjet, findes det som det første værktøj i menubaren.

10.4. Planoversigten

I planoversiktstabellen ses de planlagte aktivitets- og rutepunkter i kronoligisk rækkefølge. Denne rækkefølge kan ændres ved at vælge et punkt og derefter trykke på pil-op (/\) eller pil-ned (\/), i kontrolpanelet til venstre for tabellen. Punktet kan også slettes helt ved at trykke "slet".
For at vælge et punkt skal hele punktets række i tabellen være markeret, hvilket gøres ved at klikke i venstre side af tabellen, ud for punktet, så rækken bliver markeret, som vist nedenfor.

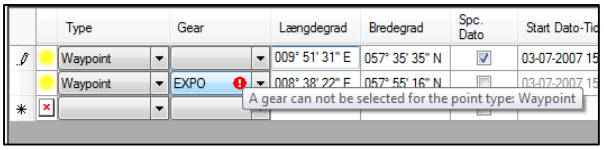


9.4.1 Tilføj punkt

Ved at dobbelt klikke på kortet, på det sted hvor punktet ønskes placeret, oprettes et nyt punkt i planoversikten. Punktet bliver oprettet som et waypoint (Se type forklaring i *Tabel 1. Planpunkt typer*), hvilket kan ændres til den ønskede type i tabellen. Den valgte position bliver automatisk indsat i tabellen som længde- breddegrad, hvilket også kan ændres manuelt så det kan specificeres mere præcist.
De resterende fælder udfyldes efter behov (se *9.4.2* Punkternes kolonner/felter)

9.4.2 Punkternes kolonner/felter

De fleste felter i tabellen kan redigeres manuelt, hvorefter punktet vil blive opdateret. Dog vil denne opdatering først ske når det ændrede punkts række i tabellen forlades.
Hvis det indtastede er ugyldigt vil der komme et lille rødt udråbetegn ikon i det ugyldige felt. Holdes musen hen over ikonet ses en forklaring til hvad der er galt.



Type:
Punkterne har en type, som beskriver om punktet er et rutepunkt eller det er et punkt hvor der skal laves en aktivitet, så som en CTD måling, eller om det er et punkt som indgår i en trawl operation. De forskellige typer er forklaret i *Tabel 1. Planpunkt typer*. Til hver type er der tilknyttet en farve, som identificerer punkttyperne i kortet og ud for hver punkt i oversigten. På denne måde opnås et bedre overblik over hvilke aktiviteter man har planlagt og hvor.

Tabel 1. Planpunkt typer

Type	Beskrivelse	Afhængighed	Nødvendige fælder
Waypoint	**Rutepunkt:** Bruges til at planlægge sejlruten, når der ikke trawles.	Ingen uafsluttede trækaktiviteter.	Position
ActivityPoint	**Aktivitetspunkt**: Aktivitet hvor skibet ligger stille, som fx. CTD	Ingen uafsluttede trækaktiviteter.	Gear, Position
StartTowing	**Trækaktivitet (start):** Start position for aktivitet hvor skibet bevæger sig med redskaber ude. Fx. trawl el. triaxus	Ingen uafsluttede trækaktiviteter.	Gear, Position
TowingPoint	**Trækpunkt:** I forbindelse med trækaktivitet	En uafsluttet trækaktivitet	Position
EndTowing	**Trækaktivitet (slut):** Slut position for trækaktivitet.	En uafsluttet trækaktivitet	Position
RestingPoint	**Hvilepunkt:** Beskriver en periode hvor skibet ligger stille uden at foretage aktiviteter	Ingen uafsluttede trækaktiviteter.	Position

Gear:
Her specificeres hvilket redskab der skal bruges til aktiviteten. Af denne årsag skal feltet kun bruges ved punktyperne ”ActivityPoint” og ”StartTowing”, hvor de skal udfyldes.

Længde- Breddegrad:
Disse felter specificere punktets position og bliver automatisk udfyldt når et nyt punkt oprettes ved at dobbeltklikke på kortet. Positionen kan redigeres ved at ændre i masken. Man skal dog markere hvert tal individuelt ved ændring eller helt slette masken, for derefter at udfylde den forfra.

Spc. Dato, Start Dato-Tid, Slut Dato-Tid:
Dette betyder specifik dato i modsætning til automatisk udregnet dato. Ved at sætte et flueben i denne boks kan selv angive start tidspunktet for aktiviteten. Når dette ikke er sat, beregnes tidspunktet ud fra den tidligere stations sluttidspunkt, afstanden og farten. Sluttidspunktet er starttidspunktet plus håndteringstiden for udsætning/optagning af redskaber.

Håndtering:
Håndteringstiden i minutter for udsætning/optagning af redskaber. For ”ActivityPoints” som fx. CTD, vil dette være hele aktivitetsvarigheden. Hvorimod for fx. ”EndTowing” punkter vil det være den tid det tager at bjerge redskaberne.

Fart:
Skibets fart i knob, fra det pågældende punkt og til det næste.

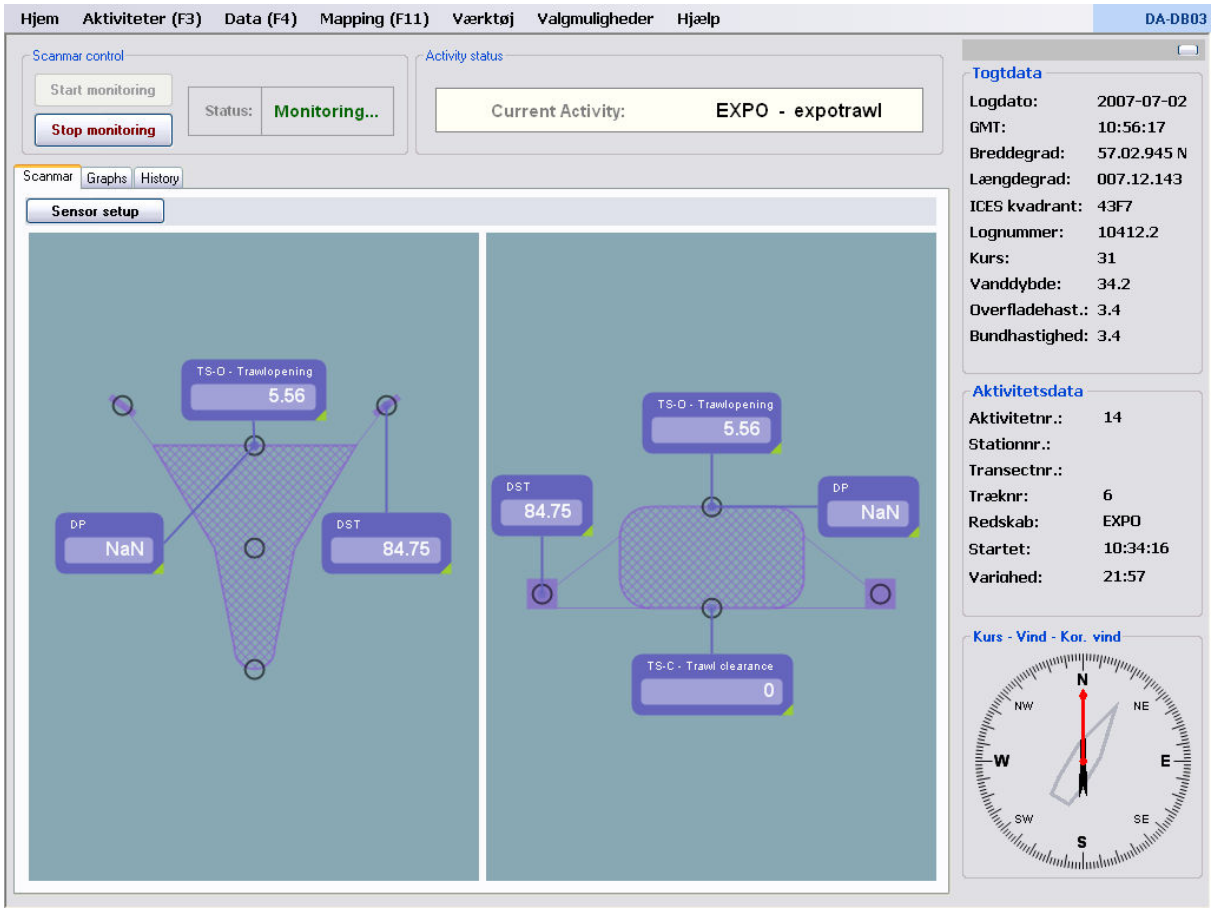
Dybde:
Havdybde i meter på den pågældende position. Dybden bliver udregnet når der klikkes på knappen i feltet for det pågældende punkt.

11. Scanmar (Trawldata modul)

The Scanmar tool is a real-time activity monitoring tool used for displaying the values of the sensors attached to the trawls. The tool currently supports 5 different trawls (GOV, TV3, EXPO, FOTØ and IYGPT) and 4 sensors (TS opening, TS clearance, door distance and trawl depth). If an activity is being performed the sensor values are displayed for the user in real-time, providing an interface for following the sensor values on any computer running SIS.

11.1. Real-time Scanmar view

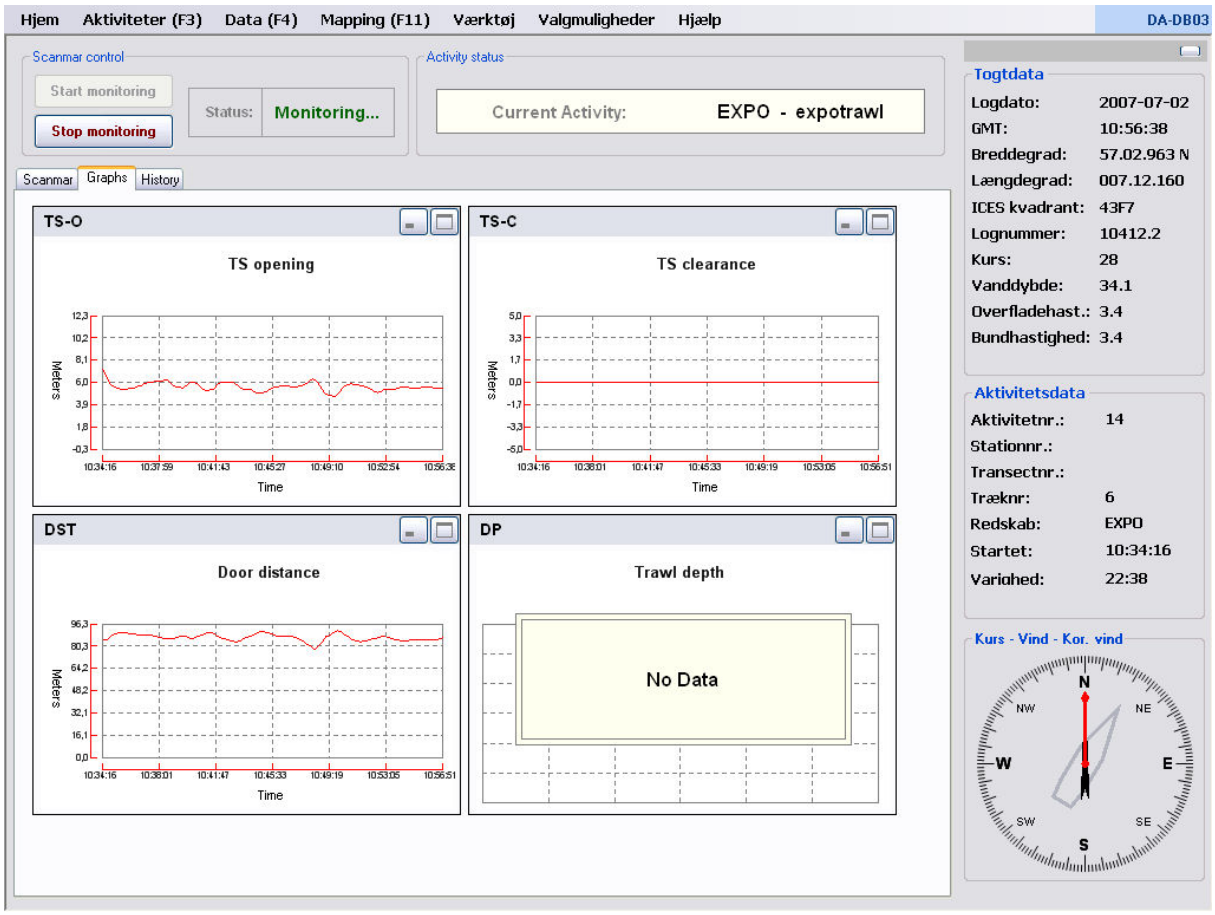
Selecting Scanmar from the Tools menu opens the Scanmar module in real-time mode. The real-time mode displays a trawl from a top view (left) and a front view (right). A status indicator at the top of the screen depicts the status of the current activity (if one is in progress). If the current activity is supported (cf. the 5 supported trawls) the top and front trawl screens are automatically populated with sensor textboxes showing the current value(s) of the trawl-sensors. A picture of the Scanmar module in real-time mode with an activity in progress is visualized below:



It is possible to start and stop the monitoring process if desired from the two top left buttons. The Scanmar tool starts in monitoring mode as default and continuously searches for any activities. If an activity is not supported the indicator will say so also displaying the name of the unsupported gear. When an activity ends, the last sensor values recorded is kept visible for the user until the next activity starts, this is also the case for the real-time graphs (next section).

11.2. Real-time Scanmar graphs

Graphs for the different sensors are provided by clicking the Graphs tab. If no activity is registered no graphs are displayed, but if an activity is in progress a graph for each sensor will be displayed in real-time (within 10 seconds). The graphs show the different sensor recordings from activity start till current time. New sensor values will automatically be added to the graphs every 15 seconds, providing a real-time graph display as depicted below.



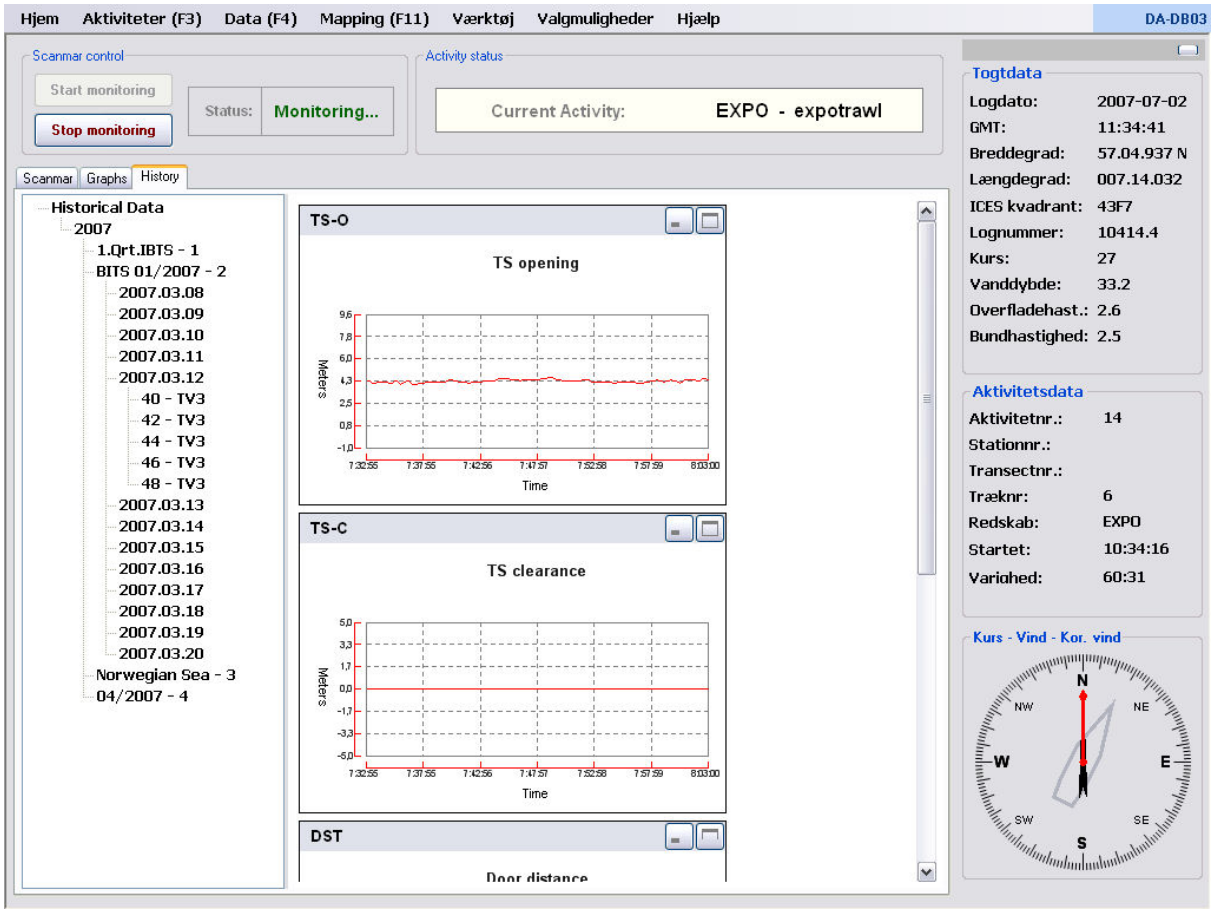
11.3. History section

The last tab-page, History, contains the history sensor data recorded from earlier activities and cruises. The sensor data from the current real-time activity will also be available in the history section but first after the activity has ended.

The history section contains a tree-view from where the different cruise years are displayed. Clicking on a year expands the node showing the different cruises from that year. Each cruise contains a list of date nodes representing each day of the particular cruise. Clicking on a date node reveals the activities from that day. Only the activities (gears) supported by the Scanmar tool are shown in the tree-view.

When selecting an activity from the tree-view, history sensor graphs are loaded (one graph for each supported sensor). These graphs display the sensor values recorded when the selected

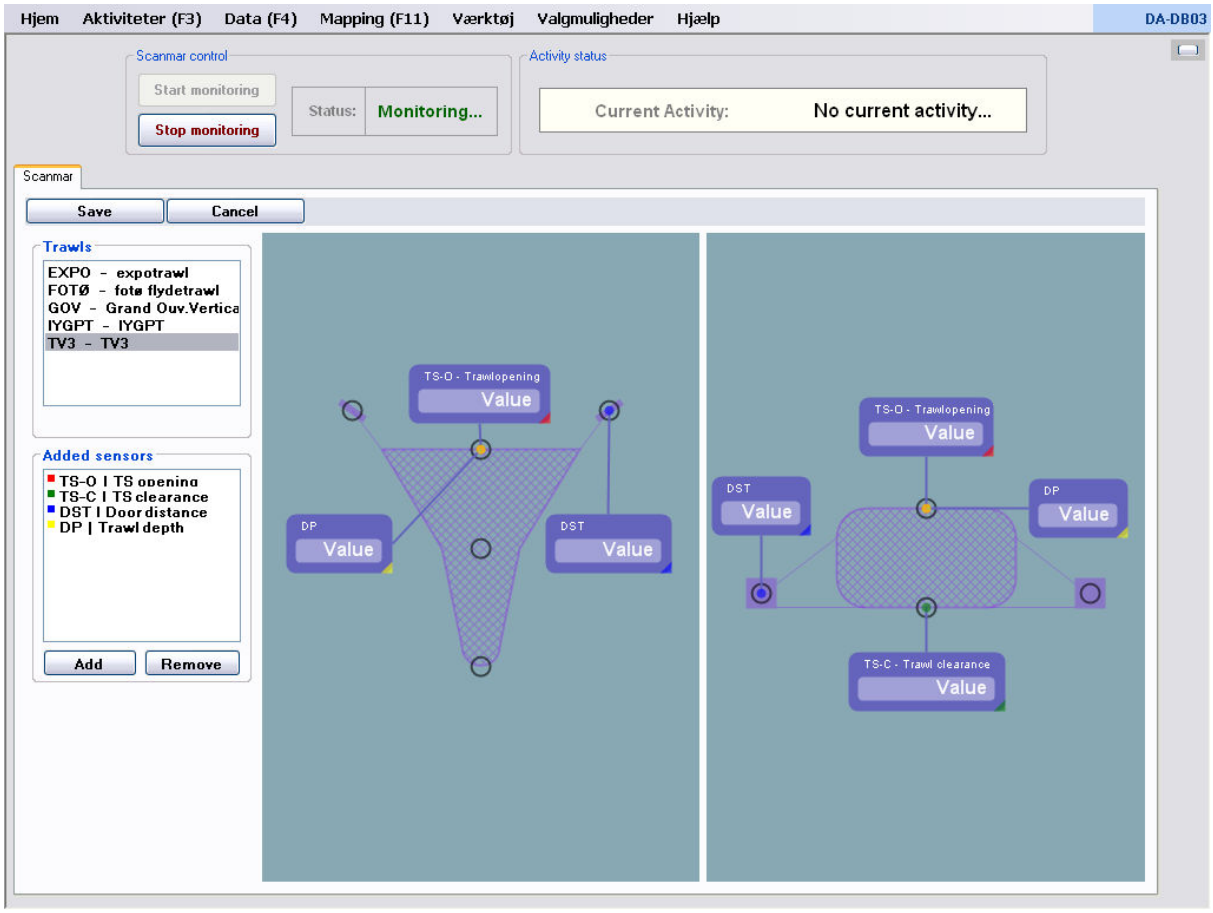
activity was performed. For user convenience it is possible to zoom in on particular areas in a graph (as described in section 5.1), maximize a graph by clicking the maximize button in the top right corner of a graph and hide a graph by clicking the hide button to the left of the maximize button. A snapshot of the history section is visualized below:



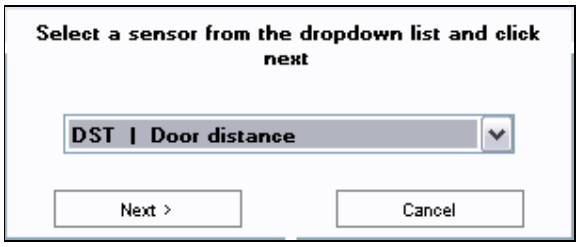
11.4. Sensor setup

The sensor textboxes shown in the sensor Scanmar view has default positions in the two trawl screens. By clicking the “Sensor setup” button, it is possible to change these textbox positions by merely removing a textbox and adding it at a new position.

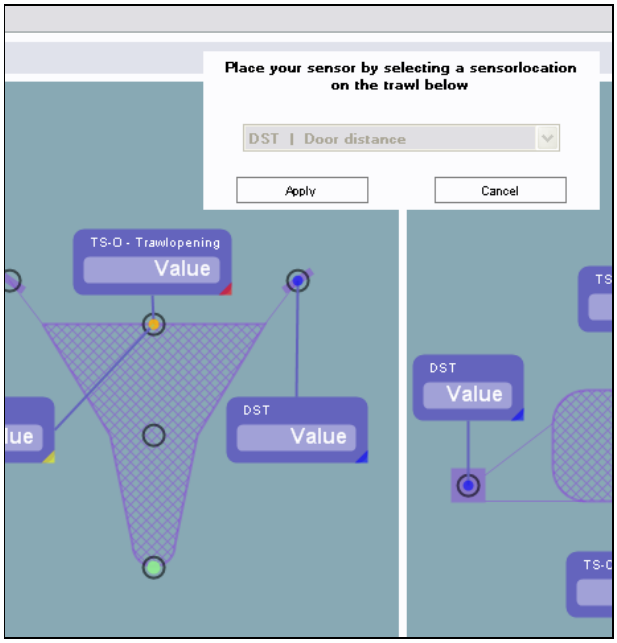
The sensor setup section provides a list of supported trawls in the left pane. Selecting one of the trawls shows the current user defined sensor setup for that trawl. The list of added sensors is then populated displaying the added sensors for the selected trawl. It is possible to remove and add sensors to the trawl from the list customizing it as needed. An image of the sensor setup section is shown below:



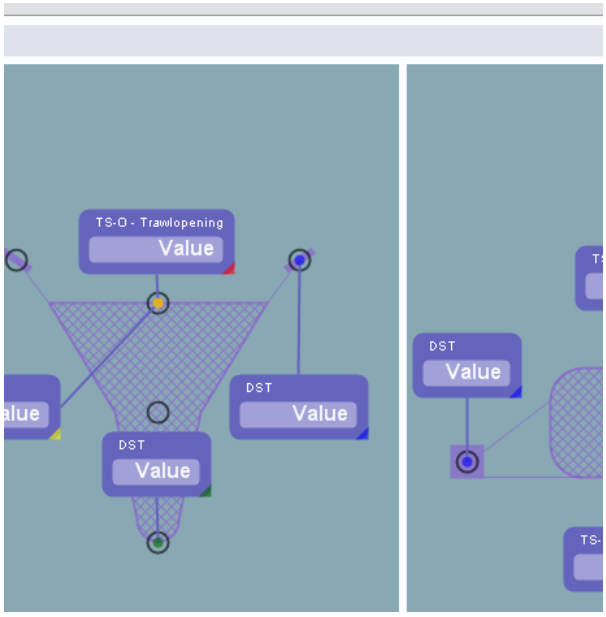
To add a new sensor to the trawl click the “Add” button below the Added sensors list. This opens a small wizard that guides you through the adding process.



After selecting a sensor from the drop-down list and clicking next it is time to select a position on the trawl to add the sensor textbox. The sensor positions are defined as black circles situated on the trawl. A sensor textbox is placed by clicking on one of the black circles and selecting “Apply” in the wizard box. A screenshot of this process is shown below:



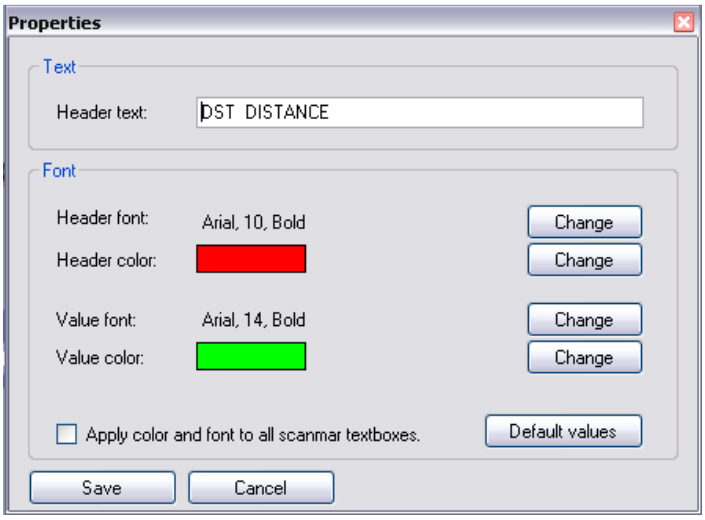
A) The door distance sensor has been selected from the dropdown list and the sensor position at the end of the trawl has been selected (visualized by the green filled circle)

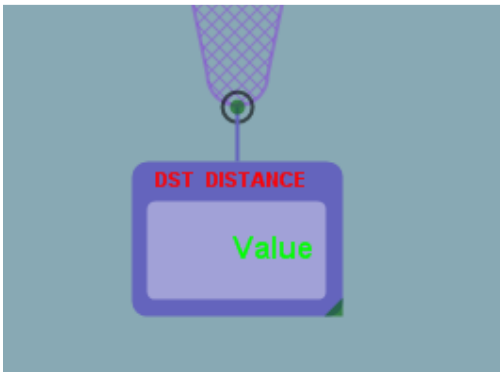


B) “Apply” has been clicked and a new sensor textbox has been added at the sensor position at the end of the trawl.

When a sensor has been added to the trawl it appears on the Added sensor list and on the top and front view of the trawl. It is possible to customize the sensor textboxes by moving and resizing them as normal windows behavior. It is also possible to customize the fonts, colors and headings of the textboxes by right-clicking them and selecting “Properties…” or by simply double-clicking

one of them. After editing the fonts and changing the header text the textbox settings can be stored by clicking the “Save” button situated in the bottom left corner of the properties from (see the screenshots below).

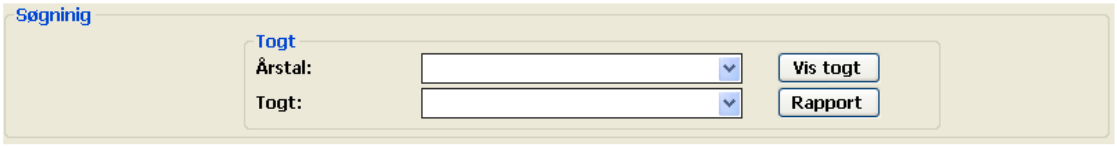




When all editing is done, the sensor-settings are stored by clicking the “Save” button just below the Scanmar tab. If the changes made are undesirable click the “Cancel” button next to the “Save” button undoing all new modifications.

12. Cruse repport

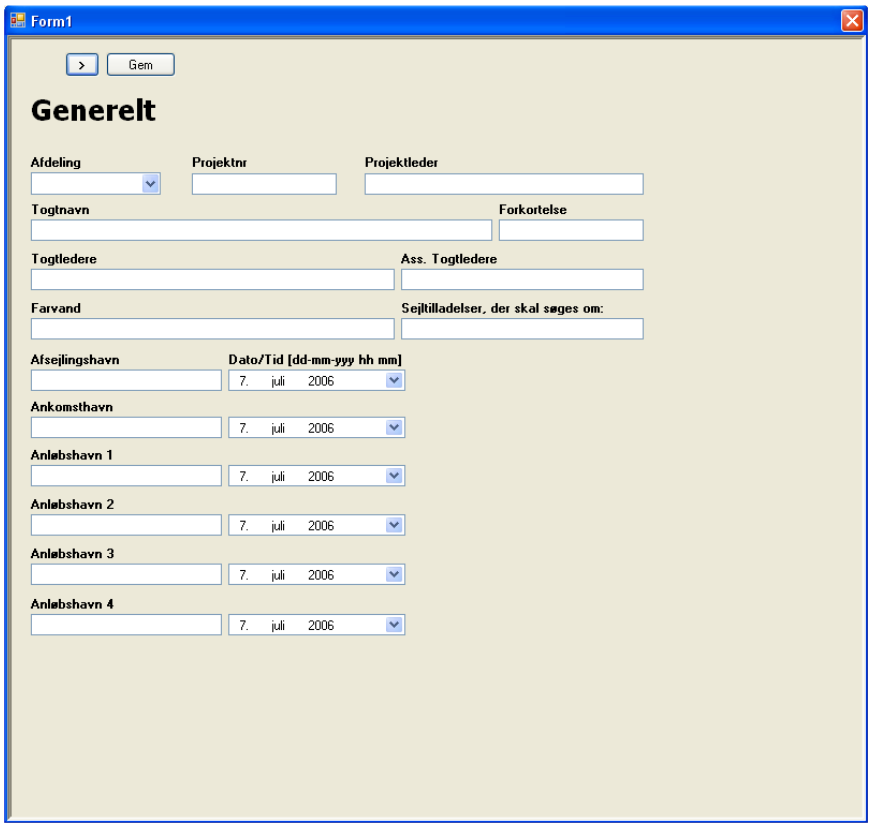
This part is meant as a detailed report about the individual cruise and will contain a great amount of extra information about the cruise. A year is chosen then a cruise of the selected year. Show cruise will display a short overview of the cruise data, which will not be editable. The report button will open a 5 pages report which is possible to type such information as department, project number and also to write the ship's report. All 5 pages are shown below (figure 22a – 22e).



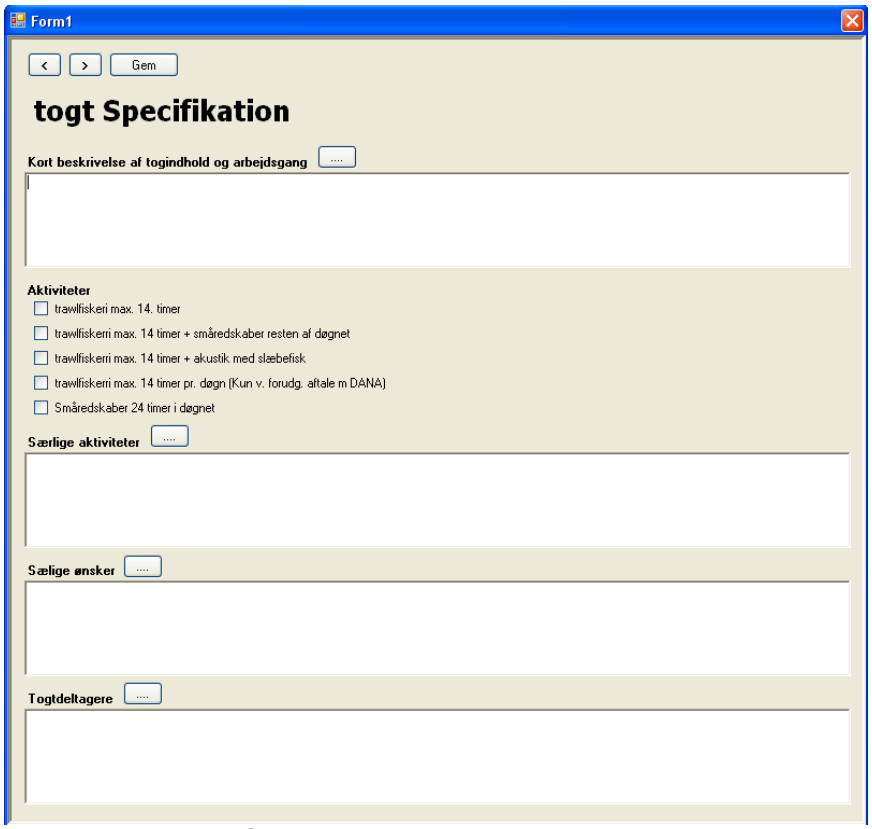
(Figur 20 – Togt rapport)

There are build in word-editor on more of the report pages. This gives the opportunity to format the text and insert images along with the text. By clicking the icon below, the word-editor will opens (figure 21)

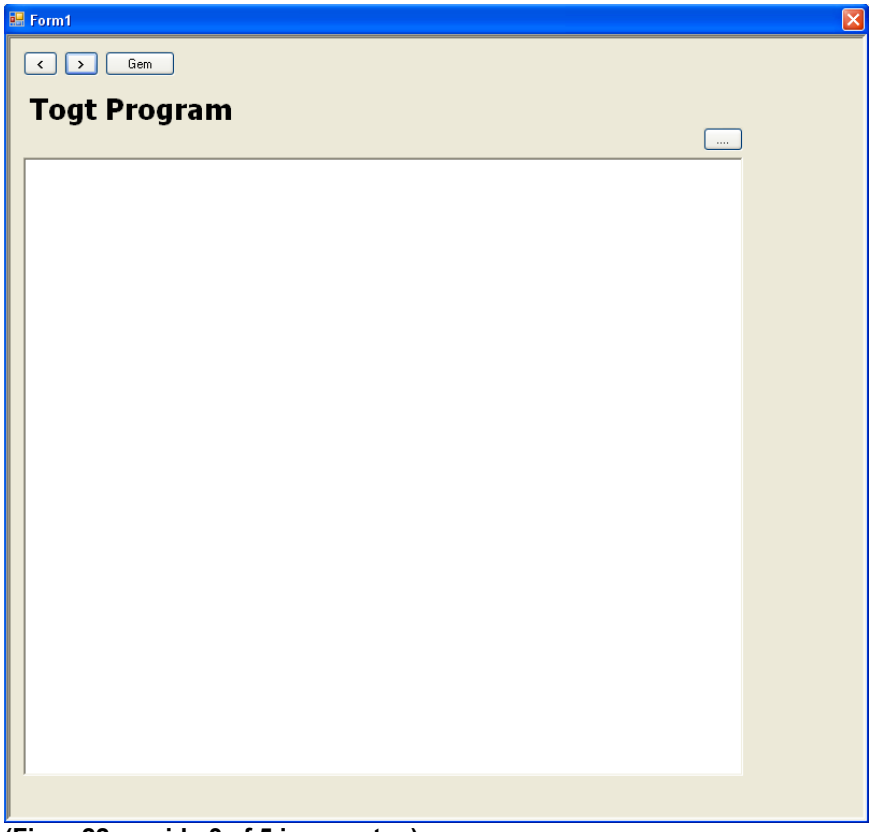
(Figur 21 – word-editor knap)



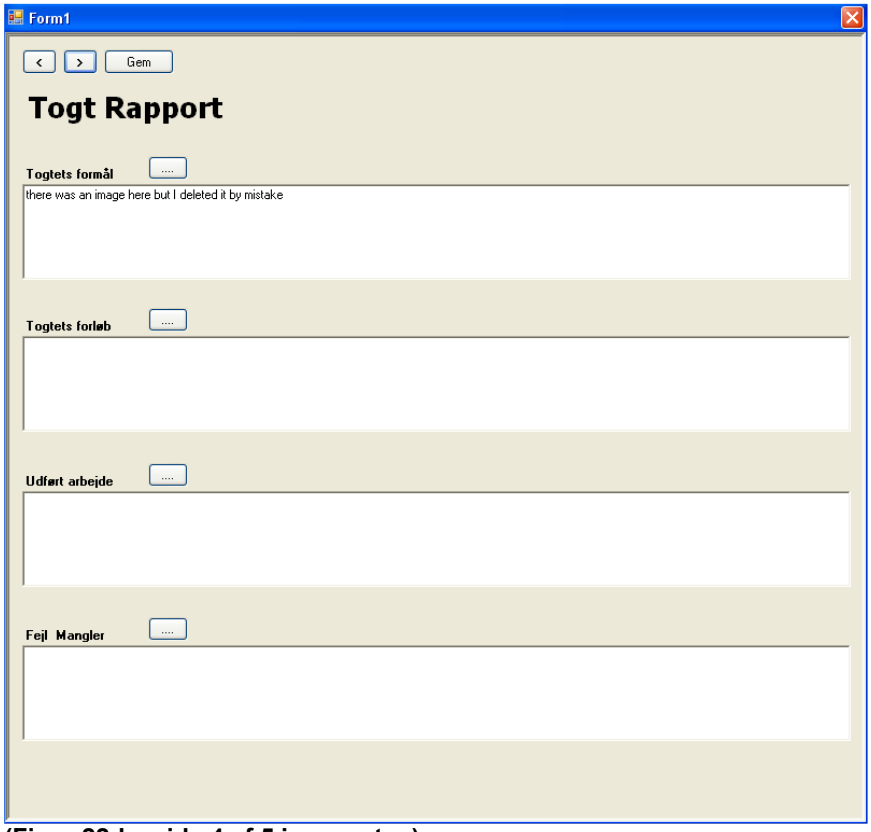
(Figur 22a – side 1 af 5 i rapporten)



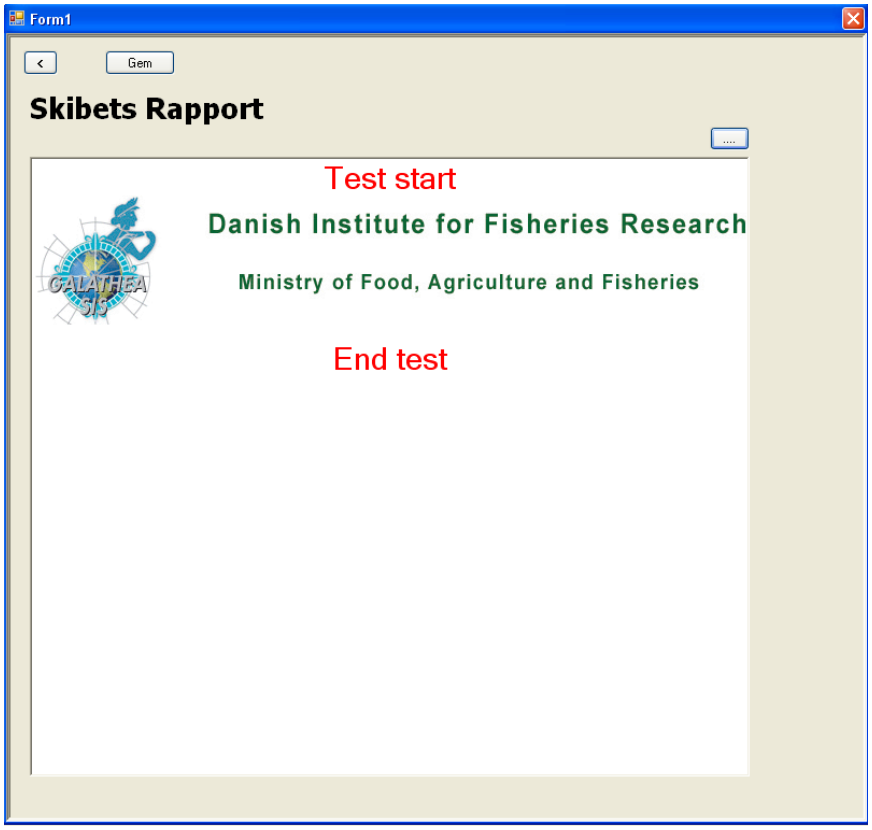
(Figur 22b – side 2 af 5 i rapporten)



(Figur 22c – side 3 af 5 i rapporten)



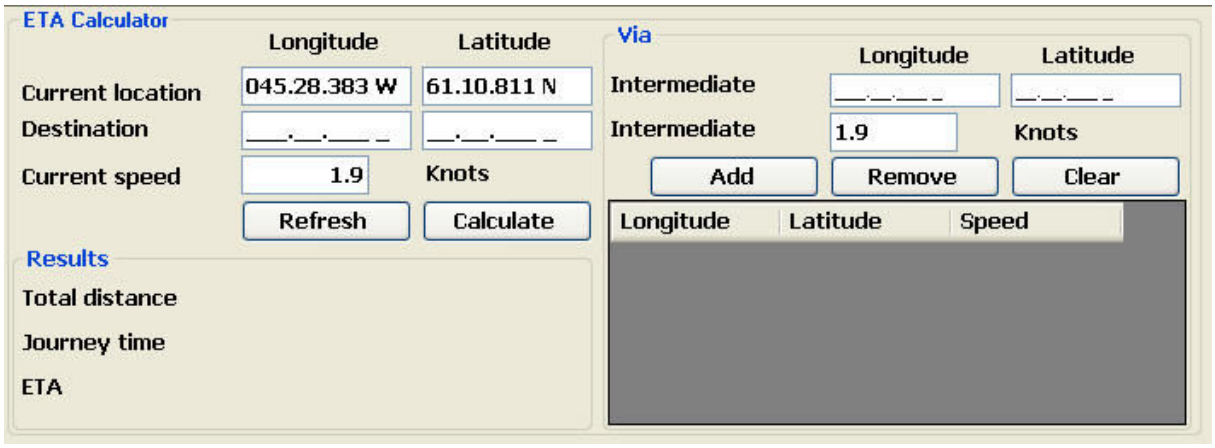
(Figur 22d – side 4 af 5 i rapporten)



(Figur 22e – side 5 af 5 i rapporten)

13. Distance Calculator

The distance calculator is meant as a helping tool to calculate the time it takes to get from A to B – Beside it is possible to input other coordinates along the way. By specifying an average speed, the application will output an estimated traveling time (figure 22).



(Figur 23 – Distance calculator)

14. Appendix A – Data Sampling Types

- Navigation
  - Course
  - Ships speed through water
  - Ships speed over bottom
  - Depth
- DMI Meterologisk
  - Air Pressure
  - Relative Humidity
  - Temperature
  - Wind direction
  - Corrected Wind Direction
  - Wind Speed
  - Corrected Wind Speed
- Ferry Box
  - Secondary Temperature
  - Salinity
  - Oxygen
  - ChlA
  - Green
  - Blue
  - Crypto
  - Brown
  - Yellow
  - SPAR
- CTD
  - Pressure
  - Temperature
  - Conductivity
  - Salinity
  - Density
  - Oxygen
  - Fluoresence
  - OBS, Turner SCUFA
  - Irradiance
  - Surface irradiance